Isolation, Identity, and Gender: An Investigation of Vowel Variation in the Gloriavale Christian Community.

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Abstract

This thesis explores the Gloriavale Christian Community, an isolated religious community currently living on the West Coast of the South Island, New Zealand. The social structure of the community differs significantly to modern urban communities - their 'us vs them' ideology results in heightened isolation, intense gender segregation is part of their philosophy, and their Christian principles have allowed the community's population to grow at an exponential rate. Given the interesting dynamics of the community, little attention has been given to the linguistic consequences which may occur. In turn, this thesis is the first to fully investigate how identity, isolation, and gender have influenced monophthongal vowel shifts in Gloriavale over three generations (settlers, first generation, second generation). This thesis takes speech data from Gloriavale documentaries and conducts sociophonetic analysis on eight monophthongal vowel shifts over three generations. This process is replicated with a North Canterbury corpus, a less isolated community, to compare the effects of Gloriavale's unique social landscape. The results found greater degree of variation in the Gloriavale speakers than the North Canterbury speakers over three generations. An investigation into the Gloriavale data assured that this degree of variation is not an artefact of assumed Australian settlers in the data. Closer investigation into Gloriavale finds intriguing gender differences. Gloriavale women are shifting their vowels in a progressive, monotonic manner, with each generation producing vowels in different acoustic spaces. Meanwhile, the men appear to be reversing many of their vowels, with the younger men realising some vowels in similar acoustic spaces of the older men. The findings here are supported by data modelling procedures, using linear regression models with age, gender, and corpus as predictors. This thesis accounts for the key findings, with the gender findings reviewed under two paradigms. First, the gender results are accounted for under the intended apparent time construct which assumes language change over time, while the second account investigates how differences in life stages result in vowel variation over a speaker's lifespan. The former account supports the women's findings, while the latter account supports the men's. This thesis identifies that regardless of different accounts for gender variation, isolation and identity are at the forefront of variation in Gloriavale. In turn, this research bridges gaps within the literature and opens possible avenues for future research.

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Chapter 1

1. Introduction

The *Gloriavale Christian Community* is New Zealand's largest intentional community situated near Lake Haupiri on the West Coast of the South Island. Founded in 1969 by Australian Evangelist, Hopeful Christian (formerly known as Neville Cooper), the community became well-known in New Zealand for their exclusive livelihood which obeys their literal interpretation of the Bible. Over the past 50 years, the community has become increasingly more isolated, and identity constructions within and between the community distinguishes them from the 'outside'. Due to the unique social settings at Gloriavale, the community provides unique linguistic insights which may enhance and challenge our current understandings of linguistic variation and change. In particular, the role of isolation, identity, and gender are external factors potentially influencing extreme vowel changes occurring in the community, unlike that of open communities in New Zealand.

This thesis will analyse eight of Gloriavale's monophthongs with respect to age and gender, and compare them to North Canterbury's monophthongs, over an apparent time construct of three 'generations' using corpus data. The research identifies the importance of isolation, identity, and gender factors in variation research on speech communities, and that isolated communities may bridge gaps in our knowledge of sociolinguistic variation. *Chapter 2* is a literature review and background exploration into sociolinguistic study of variation, accounts for interaction and language change, gender and variation, New Zealand English vowels, and isolation literature. This chapter will also introduce the reader to Gloriavale and give a detailed description about their origins, gender segregation, isolation status, and previous Gloriavale research. This chapter finishes by discussing the aim of this thesis, the research questions, and the hypotheses based on the discussion above. *Chapter 3* explains the methodological procedure used to obtain data from both Gloriavale and a comparative corpus (North Canterbury), and explains how that data was filtered, ready for data modelling and analysis. In *Chapter 4*, the results will be discussed, first by comparing Gloriavale to North Canterbury, and then focusing solely on Gloriavale, highlighting age and gender differences. *Chapter 5* involves a comprehensive discussion from the findings, following into *Chapter 6* which concludes the research and discusses the limitations and future aims of Gloriavale and linguistic research.

Chapter 2

2. Background

This chapter provides the reader with an overview and understanding of literature relevant to this thesis. First is an overview of the study of language change, followed by an in-depth discussion of contact-induced language change. The focus here is on long-term accommodation processes which lead to new dialects in monolingual speakers. Next, gender and language change are reviewed, highlighting previous claims about why women tend to realise more prestigious forms and lead in sound change. Following this is a brief introduction to the New Zealand English vowel system to familiarise the reader with the vowels analysed in this thesis. A subsection here combines the two previous discussions, reviewing how gender has influenced New Zealand vowels. Next, isolation as a sociolinguistic factor is explored, reviewing myths about isolated communities, how researchers should approach and label such communities, and why isolated communities are linguistic goldmines. Following this is a summary of the Gloriavale community, including their origins and settlement, gender roles, isolation status, and previous Gloriavale research. Finally, this chapter ends with this thesis aim, research questions, and hypothesis.

2.1 The Sociolinguistic Study of Language Change

In one of his earliest sociolinguistic studies, Labov's study investigating /ai/ and /au/ variants in speakers of Martha's Vineyard he writes "by correlating the complex linguistic pattern with parallel differences in social structure, it will be possible to isolate the social factors which bear directly upon the linguistic process" (Labov, 1963: 273). With the introduction of *Varbrul* (Cedergren & Sankoff, 1974), sociolinguists were not only able to investigate language change in a more scientific way, but they were able to justify their data with greater statistical analysis, becoming standard procedure in language analysis. This thesis grows from the years of sociolinguistic study of language change which has led to our understanding of such change and our ability to investigate such change using corpus data and quantitative methods.

2.1.1 Contact-Induced Language Change

For this thesis, the focus on contact-induced language change is limited to monolingual speakers and to change over time (as opposed to short-term or immediate contact-induced changes).

One field of study which fits this focus is that of New Dialect Formation (henceforth, NDF). NDF is a sub-type of contact-induced language change based on human migration and settlement. This type of change focuses on linguistic processes that happen when speakers of mutually intelligible dialects are in close, immediate, and long-term contact with each other (Kerswill, 2010, 2013). Over generations, the mixture of dialects and the input of different linguistic varieties create an output 'new' variety where the current speaker population converges on a set of linguistic norms that are different to previous norms (Hickey, 2003; Kerswill, 2010).

Trudgill (1986, 2004, 2008) and Trudgill et al., (2000) propose that a *Deterministic Model* can explain and predict changing linguistic properties in NDF. The fundamental approach to this model is that variant survival and the emergence of a new linguistic variety is dependent on automatic accommodation of face-to-face interactions (Trudgill, 2008). Thus, this model predicts a final dialect based on speaker demography and speaker population. As such, wherever there is a demographic 'majority' of regional speakers', the numerical occurrence of their variants is highest in their community. In turn, these variants are the features most likely to survive into the new norms of current speakers. This is termed as the 'majority principle'. Trudgill (2004) explains that this model is only applicable to 'tabula rasa' conditions, where speakers of the language in question had not previously lived. Thus, social factors do not influence the output dialect. The Deterministic Model is divided into three stages, where each stage reflects the linguistic process which occurs over three successive generations of speakers. These linguistic processes involve *accommodation* - when speakers reduce their speech patterns/variants to better match that of the listener (Giles, 1973), *levelling* - the reduction of less frequent or marked variants (Trudgill, 1986), and *focusing* - the reduction of variant forms resulting in a more crystalised and homogenous dialect compared to previous generations (Trudgill, 1986).

One criticism of the structure of the Deterministic Model arises when the term 'generations' is applied to literal family generations, rather than a defined age-range of speakers. In the case of Trudgill et al., (2000) when they were modelling NZE, Meyerhoff (2006) highlights that early New Zealand settlers often had large families, with age gaps spanning twenty or more years. In turn, the oldest and youngest siblings could represent different generations of speakers. Additionally, Hickey (2003) responds to Trudgill et al. (2000), suggesting that the Deterministic Model is too simple and, at least, needs to include speakers' unconscious but active participation in the creation of a new dialect. Hickey believes speakers are in unconscious control of developing a new variety to create a distinct linguistic identity. Hickey (2003: 215) suggests that this may not apply to the levelling out regionally-marked features but it can be viewed as an "unconscious motivation determining the

extent to which inherited ongoing linguistic change is favoured or not". Speakers (children in particular), may understand a 'trajectory of change' leading to variant survival, which suggests that speakers have some sort of linguistic control of change. Furthermore, Hickey suggests there may be internal and external reasons for why one variant may survive over generations. Internally, such variants may survive because of spread regularity. Externally, speakers may recognise which variant is more innovative or more conservative which informs the younger generation about which variants to favour in certain contexts.

A third criticism of this model is the disregard of social influence in contact-induced change. The Deterministic Model is underpinned by the majority principles, showing many parallels to Mufwene's (2001) 'founder effect'. Derived from the biology's 'founder principle', Mufwene (2001) describes the founder effect as certain structural features a new dialect may have is largely predetermined by the variants spoken by the founder speakers of the new settlement. The 'founders' amplify variation and include biases towards sociolinguistic aspects of certain variants. Some variants may undergo 'generative entrenchment', where they survive simply because they are older and are passed down to more speakers throughout more generations, creating more 'transmitters' of such variants (Mufwene, 2001). In turn, a strong belief has been rooted that the only social factors which matter is demography and speaker population. Trudgill et al. (2000: 315) overtly dismiss social factors when modelling NZE, stating that:

> "... we have quite deliberately eschewed ideology and linguistic attitudes as explanatory factors. What has happened appears to us to be deterministic in the sense that characteristics of the new dialect can be entirely accounted for without them".

Trudgill (2004:157) further defends the claim, noting that "it would be ludicrous" to associate any modern NZE variants with local or national identity. Schneider (2008) responds to Trudgill's model, arguing that the narrow concept of identity and his choice of case studies are unconvincing. In particular, Schneider suggests that accommodation and identity are dependent on each other and understanding social identity is essential in contact situations. Schneider rebuts that if Trudgill does accept accommodation, which he does, then it is difficult to understand why Trudgill dismisses identity altogether. Schneider (2008: 263) protests for identity's linguistic power, saying:

> "Accommodation only works within groups, those group definitions and delimitations, and these are defined on the basis individual's identity choice as a prime constituent of group cohesiveness course, identities can be multiple and dynamic; they need to be

> negotiated, they may change in the course of time and vary from one social context to other. Linguistic accommodation, on the other hand, is a commonly viewed rather long-term, goal-directed process, fueled by one constant identity projection".

In turn, various other scholars have developed models or arguments on contact-induced language change with the incorporation of social elements. Schneider's argument above highlights a co-dependence between speaker identity and linguistic processes. His beliefs are reflected in his *Dynamic Model*, whose foundations lie within identity theory, language contact theory, and accommodation theory (Schneider, 2003). Similar to the Deterministic Model, the Dynamic Model applies to post-colonial settlements. Schneider suggests there are fundamentally uniform development processes which occur in many colonial situations, involving both sociolinguistic and language contact between two speech communities. Here, speech communities undergo five consecutive developmental processes: *foundation, exonormative stabilization, nativization, endonormative stabilization,* and *differentiation*. Many of the Dynamic Model processes are fundamental and transplantable onto other forms of contact-induced change. In Schneider's (2003: 256) words:

> "The… model is clearly structured and widely, perhaps universally applicable, building as it does upon unilateral implications—similarities in historical and sociopolitical processes and events lead to constants of sociopsychological identity construction, which, in turn, result in specific sociolinguistic realities and linguistic consequences".

It should be noted that Schneider's Dynamic Model does not deny Trudgill's linguistic processes happening during contact-induced change (e.g. accommodation, levelling, focusing), but his five-phase model provides a more social perspective on *why* dialect varieties occur in post-colonial settings and how they become unique to newly-formed identities. Unfortunately, Gloriavale is not a community borne from post-colonial settlement, thus Schneider's model cannot be directly applied to the community. However, it should not be dismissed that the discussion above introduces the importance of social factors onto the linguistic process described in the socially lacking Deterministic Model. So which contact-induced phenomenon incorporates both the linguistic processes and social information in a non-post-colonial setting? The answer may lie in *koineization.*

Multiple scholars have come forth explaining different linguistic and metalinguistic roles that occur during koineization (see Kerswill, 2013), but the consensus is that koineization involves simplification and reduction of variants when speakers of similar dialects come into prolonged

contact. *Simplification* refers to the increase in variant regularity and/or a decrease in markedness (Mühlhäusler 1980, as cited in Kerswill, 2013). *Reduction*, a process inferred in the Deterministic Model, refers to the processes that lead to a decrease in the referential or non-referential potential of a language (Mühlhäusler 1980, as cited in Kerswill, 2013). The Deterministic Model does apply to koineization (rather than only NDF) in the form of 'tabula rasa' koineization, whereby, there are no prior speakers of the language/dialect in question (Kerswill, 2010; Trudgill, 2004). However, as the previous discussion exemplified, tabula rasa conditions disregard social factors as drivers in the output dialect (Kerswill, 2013). Alternatively, 'New Town' koines focus on the koineization in areas where there are prior speakers of the same language.

Kerswill & Williams (2000) investigate the New Town Koine in Milton Keynes, England, and suggest that adults, children, demography, and social network characteristics, in addition to the majority principle, are crucial to koineization outcomes. This paper will be described in some length, given their relevance to adult-children demography which is relevant to the Gloriavale community. For Kerswill & Williams, investigating children is central to the development of a koine dialect as families often immigrated together, and children of settlers begin the first focusing and accommodation processes. Furthermore, children are more likely to undergo a greater influential change in social identity during adolescence, and this is reflected in their innovative use of linguistic variants. In turn, the development of a koine "will be linked to these developing capabilities on the part of the child" (2000: 68). Milton Keynes provides the perfect investigation of children-centric focus given their relatively higher birth rate compared to the UK average and a quarter of the population is under 15 years old (2000: 78). Furthermore, Kerswill & Williams takes into account the wider socio-historical background of Milton Keynes, as settlement dynamics further influence koineization.

Kerswill & Williams recorded 48 children (eight boys and eight girls over three age groups - 4, 8, and 12) in early-mid 1991, followed by a follow-up recording in late 1992 to measure changes in variant usage within and between participants. One caregiver per child was also recorded. Ten variables were considered for analysis (see 2000: 83 for overview). They found that regionally marked forms are somewhat disfavoured in children's speech (dependent on a child's social network) and their data reflects clear signs of focusing in children's speech, indicating focusing processes occurring by the second generation. Kerswill & Williams discuss the influence of the child's social network on their variant selection, particularly within their peer-groups. They also note the rapidity at which children can restructure their phonologies. This highlights how the variables in question are not the result of regional dialect levelling due to discontinuity across generations in Milton Keynes. The quick focusing processes in this second generation are attributed

to the linguistic similarity of the input dialects, the high proportion of children in early settlement years, and the fostering of norms via peer social networks.

In sum, the findings in Kerswill & Williams (2000) do not represent a finalised Milton Keynes koine, rather, the second generation children are creating the first Milton Keynes model. According to this, and previous, research a "high proportion of children and young people in a new town accelerates the process of koineization" (2000: 74). Wherein, the older children who are better integrated in their peer networks are those who accelerate and select the new dialect features.

Another example of New Town koineization is that of Høyanger, Norway. Solheim (2009) uses qualitative, real-time sociolinguistic interviews to investigate the role of culture, social status, and identity during the second stage of koineization in Høyanger. Solheim suggests that Høyanger depicts an immigrant koine dialect where three koineization phases occurred over three successive generations of Høyanger speakers. The first stage, *contact phase*, suggests original inhabitants and in-migrants made new interpretations of social situations, reflected in their speech. The second stage, *chaos period*, illustrates high amounts of social and linguistic diversity (reflecting Trudgill's second phase). Certain variants were prescribed to different social classes and children had learned the socially classed variants of their parents as no local dialect was formed yet. The third stage, *focusing and crystallization*, occurs when Høyanger inhabitants create a more common, collective nationhood, resulting in greater accommodation processes and reconstructions of a variant's symbolic value. This results in a dialect where the fourth generation can now acquire as a marker of Høyanger identity. Solheim also emphasizes that cultural values and social relations may overrule Trudgill's majority principle. Thus, Solheim argues that the formation of Høyanger's dialect is dependent on social constructions in a very fluid and mobile society. Similar to the Dynamic Model and the Milton Keynes koine, Solheim highlights the importance that identity and social factors play in language change and the predisposed varieties speakers bring with them in any new dialect formation.

The above discussion hopefully informs the reader that contact-induced language change is a well-documented linguistic (and social) phenomenon with multiple models. NDF and koineization can be modelled as linguistic-centric, as such the Deterministic Model, however, this model faces difficulty in New Town koines whose linguistic processes are heavily determined/influenced by the population's social factors. In turn, this thesis centralises on the New Town koine/Dynamic Model theory, focusing on the importance of identity and social settings in contact-induced language change in Gloriavale.

2.1.2 Studying Language Change

A common methodological practice for sociolinguistics when studying diachronic language change is using the 'apparent time construct' with synchronic data. This construct acts as a proxy for investigating language change by taking speakers of different ages (or generations) and seeing their use of variants over time. The increasing use of a variant over generations suggests that such variant is becoming the standard in such dialect, while a decreasing use of a variant over generations suggests that such variant is becoming less frequent in the dialect. In turn, the basic underlying tenet of the apparent time construct is that differences among generations of adult speakers mirror real diachronic change in a community as well as reflect language features used at the time each generation learned it (Bailey et al., 1991; Hansen, 2018). Therefore, using an apparent time construct also assumes that individual vernaculars are stable after the critical period of learning language, so that adult speakers are more or less 'fixed' in their speech patterns. Bailey et al., (1991: 242) highlights that the use of apparent time is a good strategy for approaching the "fundamental problems of language change - the transition, embedding, and evaluation problems".

However, one of the biggest criticisms with the apparent time construct stems from its core principle - that adult speakers have stable vernaculars. With that, much research has been dedicated to the understanding of adult speaker variability by using both apparent time and real time data. For example, Harrington et al., (2000) utilizes real time data of Christmas broadcasts from Queen Elizabeth II from the 1950s and 1980s to explore the shifts in her vowels over time. They found that over time, many of the Queen's vowels have shifted towards similar acoustic spaces of younger and/or lower-class speakers of the standard southern-British accent. Later, Harrington (2007) uses the same broadcasts, this time spanning from 1952 to 2002, to investigate the relationship between synchronic variability and diachronic change (or 'life stage' variation as explored below). The results found that the Queen's /u/ monophthong fronted over time associated with coarticulatory phonological constraints and her /ae/ diphthong lowered over time associated with vowel hyperarticulation. Using real time data, the above studies demonstrate how individual variability is possible after speakers have passed the critical period. Furthermore, Bowie (2005: 56) also found individual variability in five adult speakers from Utah with real time data, suggesting that "it is difficult to justify the assumption that the core linguistic behaviour of a speaker actually reflects the same system from year to year". Pope et al., (2007, as cited in Wagner, 2012) revisited Martha's Vineyard and compared adult speakers of different ages at two points in time, finding an increase in nucleus raising of /aw/ in every comparable cohort. Eckert (1997, as cited in Wagner, 2012) notes that individual variation may be motivated by several social factors, such as increasing awareness

and salience of linguistic norms, gender norms in the community, and other aspects of one's social identity.

This leads to two, perhaps interconnected, types of speaker variability - age-graded variation and life stage variation. Age-graded variation implies that different ages show distinctly different patterns in variant usage, but this pattern is apparent across generations when the community is stable (Wagner, 2012). An example of this stable variation is that of the (ing) variable, with a higher rate of the nonstandard /in/ form used by younger and older speakers than the middle-age speakers who use the standard /ing/ form (Hansen, 2018). In turn, it is not that the /in/ variant is becoming the more popular feature over time given its greater usage by the younger speakers, rather the use of both features fluctuates by age without one replacing the other. Such variability in this case, may be due to varying societal pressures that are perhaps greater for middle-aged speakers. Wagner (2012) suggests that changes that are led by men may suggest age-graded variation rather than diachronic variation, given that women tend to lead language change (see below for a more in-depth discussion on gender and language change). On the other hand, life stage variation may exhibit the same age variability along with community instability. That is, some speakers change their speech patterns post-adolescence while a generational community change is in progress either towards (the innovative form) or away from (the conservative form) the direction of change (Meyerhoff, 2011; Wagner, 2012). In turn, using the apparent time construct in this context may misconstrue the rate of which the community variation is taking place (Cukor-Avila & Bailey, 2013; Hansen, 2018).

Although this study intends on investigating diachronic vowel change in Gloriavale with an apparent time construct, it is possible that given the unique life stages of the community (due to the uniqueness of the community itself), life stage or age-graded variation may (also) be occurring alongside generational change. I will return to this in Chapter 5 when exploring the implications of the results.

2.2 Gender and Language Change

Gender[1] is perhaps one of the most researched and most influential social factors which correlate to language change and variation in any speech community (Cheshire 2004; James 1996;

[1] This thesis does not mean to invalidate or disregard genders outside the man-woman binary construct. Much gender research within linguistics has divided speakers by 'female' and 'male' based on sexual characteristics, and for the purpose of this thesis, it will soon be realised by the reader why keeping this female/male construct is imperative to the Gloriavale community.

Labov 1990; Labov, 2001). The definitions of 'female' and 'male', wherein individuals are often assigned a sex at birth, results in the emergence of social gender stratifications in many cultures, leading to a dichotomy between the identity constructions of 'men/boys' and 'women/girls' (Cheshire, 2004). This dichotomy presents linguistic variation between genders.

Sociolinguistic research on gender realises this distinction and investigates phonological, phonetic, morphological, lexical, and syntactic variation between the socially constructed gender identities. Much of this research investigates the frequency and usage rate of variants between men and women (see Villarreal et al., 2021). For example, Cheshire (2004) explains that many studies conclusively find that final /ing/ in words such as *talking* and *running,* men are more likely to use the variant /in/ at the end of the word, with a surface form of *talkin'* and *runnin'*, while women use the standard /ing/ form.

Labov (1990, 2001) proposes three principles to attempt to account for variation between men and women:

"Principle I: For stable sociolinguistic variables, women show a lower rate of stigmatized variants and a higher rate of prestige variants than men" (Labov 2001: 266).

"Principle Ia: In linguistic change from above, women adopt prestige forms at a higher rate than men" (Labov 2001: 274).

"Principle II: In linguistic change from below, women use higher frequencies of innovative forms than men do" (Labov 2001: 292).

In sum, women are more likely to use overtly prestigious, 'standard' forms while at the same time, they often lead language change in their speech community, particularly speakers in the lower and middle-class. In turn, Labov suggests focusing on women's speech behaviour, as they seem to be the driving force in language variation and change. However, this notion does not explore variation which may exist within gender categories, and it should be noted that not all language change is led by women.

Many scholars give accounts as to why women are language leaders, and why women use more prestigious forms than men (see James, 1996 for an overview). Many of these accounts associate it to overt social prestige and stratified power dynamics between men and women in

society. For example, one of the most influential accounts was proposed by Trudgill (1972) which assumes that women gain their social status through linguistic means as a way to equate themselves to men who more easily secure social status through income and occupation. In turn, women use overtly *prestigious* forms. However, this account has been widely criticized. James (1996) condemns Trudgill's account, claiming that it assumes that multiple speech communities with this prestige dynamic would always see women using prestigious forms (which is not the case) and that all women have the same social goal of attaining high social class. James argues that a single factor cannot account for gender variation in any community and that investigating gender variation needs to account for the social dynamics of the community at hand, and other interlinking social factors prevalent to gender.

Milroy & Milroy (1993), claim that women do not use prestigious forms, rather they *create* them by using new and dynamic variants, caused by the social interactions and networks people accumulate. Language change is more rapid in communities that exhibit 'weak ties', or large social connections to people within and outside their own speech community (Milroy & Milroy, 1985). In turn, the interaction men and women have with speakers of the same or different speech communities differ significantly by the social network of a speaker (Milroy, 1987). Chambers (1992) further supports this account and proposes a "gender-based variability hypothesis", which suggests that women have a greater ability to style-shift than men as a result of a wider range of geographically extended social networks. Additionally, studies involving linguistic behaviours highlight that in communication, women tend to use greater politeness strategies and accommodate their speech greater (Giles & Powesland 1975, as cited in Maclagan, 2000). In turn, women shift their phonology sooner than men whilst potentially introducing new variants in their own community.

There are multiple accounts regarding gender-variation provided by scholars, however, describing them all here is not the purpose of this thesis. What is most important to note from this discussion is explanation of the account presents, but also the void within these accounts. No current literature explores gender variation in isolated communities where speakers are subjected to extended social networks *and* overt gender segregation. As will be discussed, Gloriavale exemplifies such a community, where speakers are near-maximally isolated but also adhere to strict gender segregation which results in a power imbalance between men and women.

2.3 New Zealand English Vowels

Vowels and vowel shifts in New Zealand have been a focus of many variationist studies (see Kuiper & Bell, 2000 for an overview). Given the later settlement of New Zealand compared to other British-colonised countries, available speech data can span back 150 years to the first generation of New Zealand born citizens.

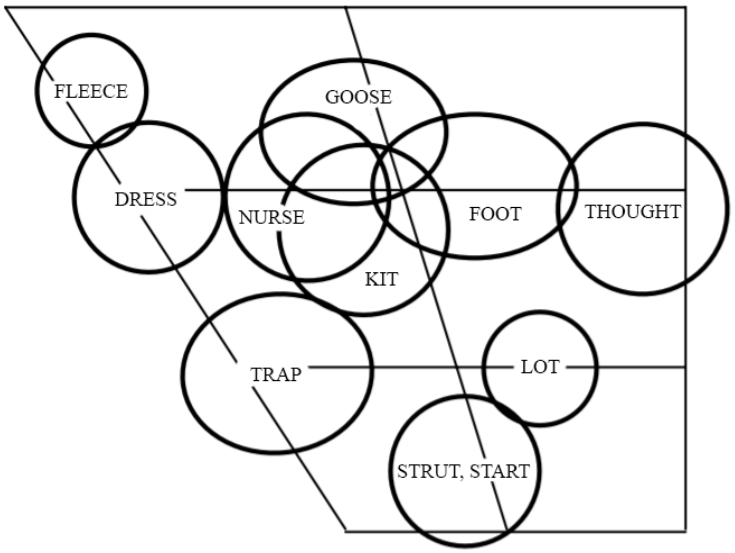
For the purpose of this thesis, only the acoustic realisations of New Zealand English (henceforth NZE) monophthongs will be discussed here. One of the most documented vowel shifts in NZE is the NZE short front vowel shift, with evidence of such chain-shift occurring in speakers born in the mid-19th-century (Maclagan & Hay, 2007). The shift depicts the raising of the TRAP vowel, causing DRESS to further raise and KIT to lower and centralise (Wells, 1982). Maclagan & Hay (2007) documents that in young NZE speakers, the DRESS vowel has continued to raise, overlapping the acoustic space of the FLEECE vowel. For phonemic contrast to remain between DRESS and FLEECE, young NZE speakers are starting to diphthongize their FLEECE vowels in response to the intrusive DRESS. The phonetic quality of the FLEECE diphthong is realised as two variants which may either resemble Australian English or Received Pronunciation (Allan & Starks, 2000). Along with these short front vowels, the low and back vowels are realised quite differently in NZE compared to other varieties (Allan & Starks, 2000). NZE has a raised LOT vowel, a central STRUT vowel, and either a lowered and/or central FOOT vowel (close to the acoustic space of GOOSE) (Allan & Starks, 2000; Hay et al., 2008; Warren, 2018).

In addition to the short vowels, the long monophthongs in NZE further distinguishes itself from other varieties of English. The BATH/START/PALM vowel (it is realised as the same lexical set given NZE's non-rhoticity), is relatively more fronted than other varieties, being more front/central for NZE speakers, close to the STRUT vowel (Allan & Starks, 2000; Hay et al., 2008). Similarly, the GOOSE vowel is predominantly central and high in NZE, but a fronted diphthong may also be realised (Allan & Starks, 2000; Hay et al., 2008). The NURSE vowel has raised over time in NZE, becoming more front and higher, potentially invading the same acoustic space as GOOSE (Maclagan et al., 2017). The THOUGHT/FORCE/NORTH vowel (again, these are fully merged in NZE due to its lack of rhoticity) is often back and mid-high in the vowel space. This vowel has diphthong variants (Allan & Starks, 2000) however this study will focus on its monophthongal variant.

In summary, modern NZE consists of a considerably high DRESS and TRAP vowel (due to the front vowel chain-shift) where some speakers have DRESS intruding FLEECE's acoustic space (resulting in FLEECE diphthongization), a more central GOOSE (with evidential GOOSE-fronting) near a centralising FOOT, a lower, central KIT vowel, a raised THOUGHT, LOT, and NURSE

vowels, and a central/lower STRUT vowel, close to a fronted BATH vowel. A vowel space of NZE is depicted in *Figure 1* below.

Figure 1. Approximation of vowel realisations in New Zealand English. *Note,* sourced from Bauer et al., (2007) with permission.



2.3.1 NZE, Gender and Language Change

Like the majority of gender-variation research, NZE-speaking women tend to lead in linguistic change more than NZE men (Holmes, 2001; Woods, 1997), and choice of variants act as gender markers and identity constructions (Holmes, 2001).

Woods (1997) investigated the change of NZE MOUTH, TRAP, and DRESS vowels over two generations in Otago, the most southern region of New Zealand's South Island. The speakers were divided by first generation NZE speakers, and their children, the second generation of NZE speakers.

Woods finds that the second generation has a relatively more closed MOUTH, TRAP, and DRESS vowels compared to the more open realisations by their parents (i.e., first generation). Woods notes that these results cannot be fully accounted for by the internal grammar of each generation and turns to external factors of gender and communicative networks. Woods highlights that the first generation women led this *innovative* sound change, but by the second generation, the women *withdrew* from this innovative variant. Woods hypotheses that social ties and networks explain the innovation-to-withdrawal pattern in women, supporting the accounts provided by

Milroy & Milroy (1985), Milroy (1987), and Chambers (1992), mentioned above, whereby, the more accommodating communicative strategies of women, in correlation to the influx of immigrants to Otago (due to the goldmine rush), resulted in women introducing new phonological variants to their speech community because of increased contact and social networks (Woods, 1997).

The findings of Maclagan (2000) further support the claims made by Woods (1997). Maclagan states that women in New Zealand have been shaping a distinct NZE accent since as early as the 19th century through the earlier use of non-stigmatised forms. Maclagan takes recordings from the Origins of New Zealand English (ONZE) mobile unit of 10 first generation New Zealanders (i.e., speakers born between 1864 and 1886, five men and five women) and analyses their acoustic characteristics to support her claim. Among the first generation of NZE speakers, women have centralised their GOOSE vowel more than their male counterparts. Consequently, the women's GOOSE was more fronted than their START vowel, unlike the men. The women began raising their THOUGHT/FORCE and LOT vowels earlier than the men. The TRAP-DRESS chain shift is more prominent in the women, and the women centralise their KIT at a much earlier stage than the men. In sum, for NZE monophthongs, Maclagan's (2000) data suggests women were at the forefront of creating a NZE dialect, evidently realising vowels closer to today's modern NZE. Maclagan (2000) also sees the same gender patterns in NZE diphthongs. She accounts for these findings through the koineization processes occurring in New Zealand at that time. Particularly, during accommodation processes, women's supposedly higher likelihood of accommodating compared to men resulted in a shift of their own phonological space, leading to the use of non-stigmatised and unique variants, resulting in modern NZE.

Villarreal et al., (2021) intended on modelling the trajectory of rhoticity in Southland English (SdlE) using current sophisticated statistical modelling analysis. Although rhoticity is not the focus of this thesis, this research is being mentioned here because the findings resonate greatly to the Gloriavale community, and perhaps suggests the best hypothesis for what this study expects to find.

Villarreal et al., used a corpus of Southland speakers with a birth range between 1868-1998, and mapped internal constraints of rhoticity across three 'generations' on an apparent time construct. Although data modelling suggested numerous internal constraints on rhoticity (such as *generation, following segment, Word-final* and *region*), perhaps the most intriguing findings were those between male and female SldE speakers. The older male and female speakers had vastly different internal constraints on their rhoticity that suggests they were not a part of the same speech

community, under what they termed the ‘Speech Community as Shared Constraints Hypothesis’ (2021: 2). This hypothesis assumes “that the existence of a community grammar defines and delimits speech communities”, where shared internal constraints can define members as part of a speech community (2021: 2).

Wondering how this is possible, Villarreal et al., investigates the socio-historical background of Southland and discovers the intense social, economic, and political gender separation during the lives of their older speakers. Their findings highlight that men and women were often segregated into gender-specific roles, both in the workforce and at home, practically beginning from birth. As Villarreal et al., (2021: 14) writes “girls and boys are encouraged to spend time with their same-gendered parent, occupying a different part of the household space... from their other gendered siblings”. Through-out school, children of the same gender circled the same social spaces, and this continued into adulthood where any free time/socializing was mostly spent in gender-specific domains. Within the workforce, men and women were not only employed in different occupations, but those who were employed by the same company worked in different specialties to one another, often working in different physical spaces. Men were considered the ‘breadwinners’, while women were expected to work up until childbirth, and then remained as housewives. Villarreal et al. (2021: 17), proceeds to further highlight Southland, and worldwide, gender segregation and concludes the high likelihood that “women and men had different constraints on rhoticity in the first half of the 20th century because they quite literally inhabited different (speech) communities”. Over time as gender segregation loosened and greater contact encouraged linguistic convergence, rhoticity constraints are not as different between the males and females of the younger SldE generation, as highlighted by their statistical modelling.

The work by Villarreal et al., (2021) is a piece of nuanced literature exploring how speakers in the same community may not be a part of the same speech community due to gender separation/segregation. In turn, more research is needed to investigate this phenomenon, which leads to a partial aim of this thesis, discussed further on.

In sum, NZE is no exception to gender variation in language change. The most prominent theories for gender variation in New Zealand are that of communicative strategies and social networks (Maclagan, 2000; Woods, 1997). However, the idea proposed by Villarreal et al. (2021) that men and women may not be a part of the same speech community due to socio-historical workings of their society provides a new account for extreme gender variation.

2.4 Isolation and Language Change

There are two common misconceptions about language and dialects in isolated communities. The first is that isolated communities have ‘unspoiled’ and ‘pure’ varieties because these communities have a more ‘backward’ livelihood. In turn, this opposes language progression and supports conservatism (Schilling-Estes, 2002; Schreier, 2009). The second misconception is that isolated communities have this unspoiled variety because these communities live a simpler, purer life, in turn, their language reflects a ‘purer’ state (Schreier, 2009; Schilling-Estes, 2002). Research proves these beliefs as inaccurate, as isolated speech communities provide rich examples of inter- and intra-community variation, differentiation, and innovation. In fact, Schreier (2009) notes that such beliefs towards isolated communities can bias researchers and skew data collection. Thus, once researchers minimise their own biases, isolated communities provide huge synchronic and diachronic potential for language variation and change literature.

Defining and measuring isolated communities proves difficult as isolation is a social construct which exists on multiple planes (Schreier, 2009; 2017). It is not as simple as labelling a community with a binary split of high or low contact because isolation status shifts over time and between communities. Thus, scholars have attempted to create some sort of criteria to evaluate a community’s isolation level. Montgomery (2000) suggests the following types of isolation which may co-occur to create comparatively higher-isolated communities: physical, sociological, economical, psychological, cultural, and/or technological. Schreier (2002) simplifies these types to offer three major isolation determinants: geographical, social integration, and sociopsychological/individual isolation.

Geographical isolation refers to the typography of the land which may inhibit easy access to a community. In turn, these communities become more self-sufficient and require less assistance/interaction from other communities. This leads to the next determinant, social integration. Along with self-sufficiency, participation (or lack thereof) with the mainstream population will also influence the isolation status of a community. Wherein, restricted interaction will lead to greater isolation, and, perhaps, even ghettoization in extreme forms. However, isolation could be independent of these two criteria and rely on the sociopsychological belief that one, or one’s community, is isolated. This is where researcher bias applies, as enforcing the belief that a community is isolated may not accurately reflect the belief a community has about themselves. Here, communities can be described as either ‘open’ or ‘closed’ and ‘endocentric’ or ‘exocentric’ (Anderson, 1988, as cited in Schilling-Estes, 2002; Schreier, 2009). The ‘open’ or ‘closed’

distinction refers to the amount of interaction with other communities, while the ‘endocentric’ or ‘exocentric’ distinction refers to the degree to which the community’s “focuses on its own ‘internal’ vis-à-vis outside norms” (Schreier, 2009: 688). Therefore, open and exocentric communities are those which display greater participation with other communities and have a greater outward-looking attitude compared to closed and endocentric communities. Given these criteria, Schreier (2009; 2017) suggests that isolation exists along a minimum-maximum continuum where a community's isolation status may shift over time.

Returning to isolation myths, it is apparent that isolated communities are not homogenous and can display synchronic and diachronic variation within the community. Schilling-Estes (1997) found that isolated communities may use traditional or marked linguistic variants to express their identity. The middle-aged men of the Ocracoke community used a raise /ay/ considerably more than other community members as a prideful token of their ‘true’ Ocracoke identity (Schilling-Estes, 1997). Interestingly, this variant is below the level of consciousness of most Ocracoke speakers. Schilling-Estes (1997) also found that Smith Islanders were increasingly using traditional variants to distinguish themselves from the mainland dialects. The Smith Island findings were attributed to a ‘dialect intensification’. Whereby, solidarity between Smith Islanders has increased due to dwindling community numbers and so the Smith Islanders who continue to live on the island, despite the pressures of leaving, are more likely to use traditional variants. In later work, Schilling-Estes (2002) highlights that although the rate of linguistic change may be slower in isolated communities, there are factors which allow for the communities to be linguistically innovative and distinct. Firstly, speakers in isolated communities do not face the same accommodation and levelling pressures as non-isolated communities and so variation and choice of variants are retained (Anderson, 1988, as cited in Schilling-Estes, 2002). Secondly, because isolated communities involve tight-knit social networks this allows for the transmission of unique varieties from generation to generation. Additionally, these unique, and possibly complex, varieties often convey intra-group social meanings so the transmission of them is partly due to social factors. Thus, Schilling-Estes (2002) suggests that sustaining and increasing intra- and inter-community distinctiveness (for isolated communities) may be determined by the following social and cultural factors:

- Geographic accessibility - lower accessibility leads to greater distinctiveness;
- Type of outside contact - contact with the outside heightens distinctiveness if done physically in the community, rather than away from it or outside the community.

- Community size - a smaller community allows for greater transmissions of unique variants, leading to greater distinctiveness;
- Psychological and attitudinal beliefs - if a community has a belief that they are isolated, this can result in greater distinctiveness;
- Perceived permeability - if a community has covert symbols of identity (e.g., flag, attire), they rely less on linguistic markers for identity so distinctiveness lowers.

For diachronic research, isolated communities are rich, underutilised sources, particularly in cases where such communities undergo koineization (Schreier, 2009). Isolated varieties may encounter an equilibrium of conservatism and dynamism perhaps due to processes of simplification and complexification happening simultaneously (Baechler, 2017; Schreier, 2009, 2016). Schreier (2009: 689) writes how isolated island communities (*Sprachinseln*):

> "...represent (linguistic and social) showcase scenarios where processes of language and dialect contact occur in substantially limited (and at times totally absent) contact with the 'outside world'... these communities provide excellent 'language laboratories' that enable linguists to investigate effects of geophysical isolation on dialect variation and change (i.e. the hypothesis that the rate of change slows down)".

The linguistic hypothesis is that language change is slow when faced with close-knit networks or 'strong ties', typical of isolated communities (Milroy & Milroy, 1985: 363). This rate of change shifts relevant to speaker contact and since contact itself is always changing, one cannot binarily define a whole community as fundamentally 'isolated' or 'low-contact' based on one moment in time (Schreier, 2016; Trudgill, 2011). Trudgill (2011) emphasizes this, and notes how it is worth looking into the *types* of linguistic change occurring in isolated communities. Low-contact isolated communities may see both simplification and complexification processes over time due to natural transmission of variants over generations (Schreier, 2016). Schreier (2016) found that the isolated speakers of Tristan de Cunha English (TdCE) displayed a tendency to simplify morphosyntax and phonological variants, and underwent linguistic innovation, typical to that of high-contact communities. However, TdCE retained older phonological features in an 'archaic, conservative' system, typical of low-contact communities. Schreier (2016) notes how the degree of complexity is a direct consequence of factors such as language input, weak vs. strong contact patterns, settlement patterns, sociocultural pressures, feature pools, identity, and prestige. Schreier (2016) also suggests that an isolation factor may override contact effects over time, where a stable, generational isolation status may trigger complexification, in turn, replacing initial variant changes.

In sum, research on isolated communities is an under-researched goldmine for both synchronic and diachronic change. What the above discussion should have made apparent is that contact and isolation is ever-changing, and that isolated communities can display both innovative and conservative linguistic changes. Additionally, defining isolation is a social construct, and to avoid researcher bias, it is best to define isolation based on geographical, social integration, and sociopsychological strata (Schreier, 2009).

2.5 Gloriavale Christian Community

The Gloriavale Christian Community is New Zealand's largest intentional Christian community situated at Lake Haupiri on the West Coast of New Zealand. Sargisson & Sargent (2004: 74) describe them as a "withdrawn separatist community, which identifies with the theological separatism that gave rise to such major religious/communal movements as the Amish and the Hutterites". They are often described as New Age, fundamentalists, and a cult due to their traditional, exclusive lifestyle and existential purpose of work and worship (Sargisson & Sargent, 2004). One of the major founding principles of the community is not just to read the Bible but to live and obey their interpretation of it, trusting completely in God. Members have a strong belief that humans are born into sin and the modern world now excuses many things that the Bible says are worthy of death (Gloriavale Christian Community, 2020). To join the Community means to "give up our own life and take on the new life that Christ offers us" (Gloriavale Christian Community, 2020). Members marry for life, raise an average of 12-13 children (due to their belief against birth control) and live in economic security. No member owns any property except the clothes on their back. All money earned is fed back into the community and no one is allowed to borrow or save money. Establishing such a community, in their words, unites a body of believers in a real physical environment allowing greater spiritual and practical ways of serving God (Gloriavale Christian Community, 2020). The community grows through its selective recruitment and high birth rate, having an average of 40 babies per year (McIntyre, 2007; "Seven Sharp Series 2015", 2015). Sociologically, Gloriavale members live a utopian lifestyle because of their utopian vision which prepares them for the afterlife or the second coming of Jesus Christ (Sargisson & Sargent, 2004).

2.5.1 Origin and Settlement

Neville Barclay Cooper (1928-2018) was an Australian evangelist who founded the community as a means of seeing the Bible practised as well as preached. In 1969, Cooper (later changing his name to Hopeful Christian) established the Springbank Christian Community in Cust, North Canterbury, on the East Coast of New Zealand's South Island (see *Figure 2*). Many of the founding community members were New Zealanders or Australians, but people from Switzerland, Germany, England, Greece, Canada, and the U.S. joined the newly formed community (Hostetler, 1987). Their economy became dependent on their members who often had trade backgrounds or were soon taught how to farm, cook, or teach.

Figure 2. Map of South Island, New Zealand depicting the Springbank Christian Community (red marker), Greymouth (yellow marker) and Gloriavale's current location (blue marker), retrieved from Google Maps.

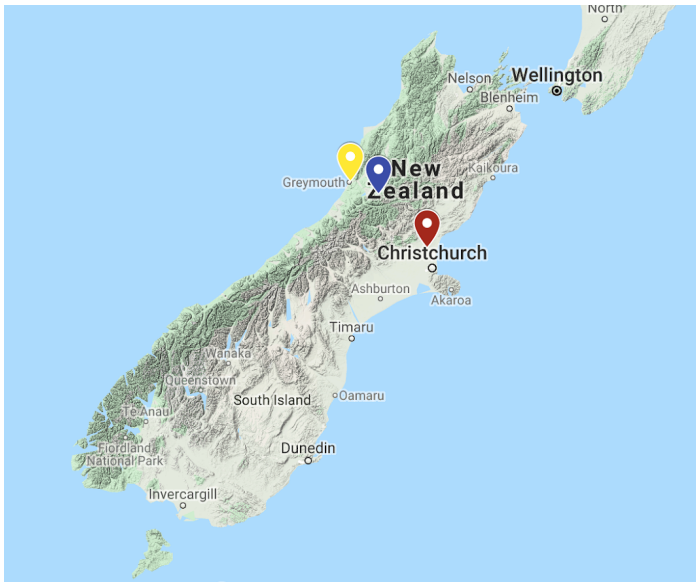
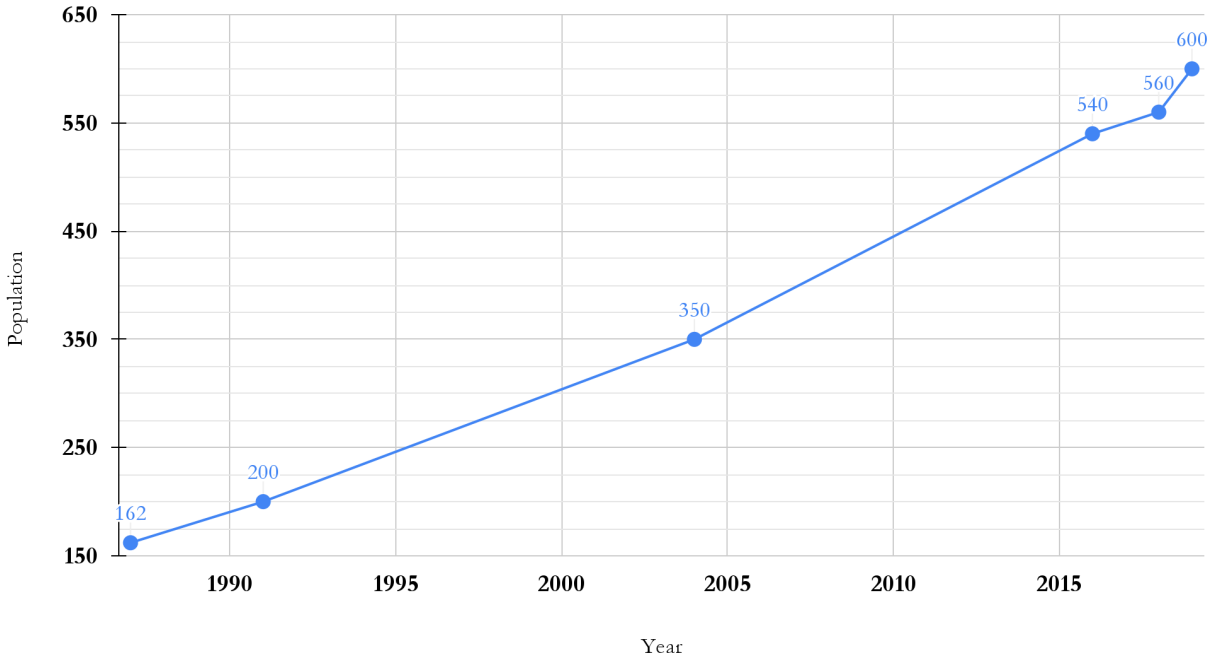


Figure 3. The current geographical location of Gloriavale, retrieved from Google Maps.

In 1987, Springbank reached 162 members, 49 of which were children under the age of five (Hostetler, 1987). Due to immense population growth, in 1991 the community bought a 917-ha property at Lake Haupiri (marker A on *Figure 3*) in an isolated area on the West Coast of the South Island. Over four years the members literally built the community from the ground, and in 1995 they shifted and established their current community, Gloriavale. By 1995, the land they owned expanded to 1700-ha. They currently live 60 kilometres away from the closest population/town, Greymouth (see *Figure 1*). They moved a population of 200 in 1991 but since then the community has tripled in size with a current population of around 600 members in 2020 (see *Figure 4*).

Figure 4. Gloriavale's population rate over time (Carroll, 2019; Evans, 2014, 2016; Hostetler, 1987; Sargisson & Sargent, 2004, 2017).



2.5.2 Gender at Gloriavale

"It's a wonderful place, as a woman, to be able to submit to the men" - Sheryl-Joy Christian (Gloriavale midwife) ("Seven Sharp Series 2015", 2015, 06.51).

One of Gloriavale's philosophies, which reflects their Christian belief, is the purpose of men and women in the community (Sargisson & Sargent, 2017). Men are ranked higher in the

community and take on more traditionally male roles such as manual labour jobs[2] and speaking on behalf of their family. Leadership is a trait only available to men, and those who run the community are a group of 'shepherds' - all males. Women are subservient to men and are taught to serve God *and* men. They take on more traditional female roles such as cooking, cleaning, washing. teaching, and sewing. This gender division is not only recognised by the community, but they strive for such dichotomy. Sheryl, a settler Gloriavale member, claims "I'm more than happy not to be the decision-maker. I love to be able to depend on the men. To be able to go and ask their advice, seek their advice - that God has given them a role above me" ("Seven Sharp Series 2015", 2015, 07.07).

The gender distinction is further implemented in the education domain. The school at Gloriavale minimally adheres to their statutory obligations and diverges away from the typical New Zealand education curriculum (Lomax & Rata, 2016). In preschool and primary, all students are taught on the same site, in the same room. However, the older students are taught skills which serve their purpose in the community, relative to their gender (Lomax & Rata, 2016). Paul, a young community member, exemplified this in a documentary, stating "the boys will learn agriculture, engineering, building...the girls learn all about food safety… and they learn how to make clothes… things that are going to be useful to them as they live in the community" (Evans, 2014, 30.28). This suggests that as the children age, they successively learn more about their roles in the community. They are taught this in separate gender domains, as there would be no reason to teach girls engineering or boys how to sew.

As a consequence of their schooling, children are often subjected to gender-oriented roles in the workforce from a young age. For example, girls as young as five often join their mothers in the kitchen, working alongside other adults and (female) friends. Charity Christian, one the kitchen co-ordinators, notes how "the little girls, they really love to get together, and they'll often come with their mummies on a seventh[3] morning and work in the kitchen" ("Feeding 500", 2018, 2.54).

Hopeful Christian, the community's founder, believes that men and women are adults and ready for marriage as early as twelve - when girls are "capable of being a mother" (McIntyre, 2007, 8.20). This suggests that Gloriavale's gender segregation may occur around the age of 12 and 13, when children are considered 'single adults'. This aligns with when children begin learning about their roles in the community and start working within those domains.

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[2] The reader should be reminded here that the members of the Gloriavale community do not work to earn money. The term 'job' and 'workforce' in this section are used to represent the type of gendered duties in the community. Community members work voluntarily as they earn no income.

[3] The seventh day is our Sunday.

Before marriage, single men and women are kept as separate as possible, refraining from physical contact pre- and during- courtship, until the night of their wedding where they consummate their marriage (Gloriavale Christian Community, 2020). Marriage is arranged by the men, where a single man will address his parents and the shepherds, asking/suggesting that he is ready to get married. Without mixing bloodlines, the single man and the shepherds will pray to God, asking for a name of who to marry. In turn, the single men and women do not come to know each other *before* marriage. Paul noted in a documentary that "the young fellas very rarely ever see the single girls" (Evans, 2014, 20.07) and when he announced he was getting married, he noted "that meant nobody would have a problem with us talking to each other" (Evans, 2014, 20.31). This further highlights the separation of unmarried men and women.

Furthermore, physical appearance dictates gender and remains the same throughout one's entire life at Gloriavale. Women must keep their hair long and under veils while the men must have short hair. Paul noted that "the head covering for the women shows that the woman is in subjection to the man… it reminds her what she's here for, what her place is" (Evans, 2014, 38.25). The women always wear ankle-length, long-sleeve dresses, believing this style to be more modest than modern, popular fast fashion. The men wear long sleeve shirts tucked into ankle-length trousers with a blue tie.

Although women are not considered equal to men, they are still valued members of the community, and respect one another. Enoch, one of the community's shepherds, described the women's work in the community and noted that "we couldn't do without them" (Packer, 2011, 05.00). The women trust their husbands and pass on any issues or ideas they have to their husbands, who may then go and discuss such issues with the shepherds ("Q&A", 2018). However, despite the mutual respect between men and women, their fundamental Christian philosophies still result in extreme gender segregation starting from the beginning of the community's settlement.

One interesting aspect which differs from previous gender segregation literature (as such Villarreal et al., 2021) is the closeness of families, both physically and emotionally at Gloriavale. Families sleep in hostels, with large families sharing two bedrooms right up until children are wed. Because of this space, brothers and sisters essentially live in the same physical space and can foster close friendships. Paul's younger sister, Jordan, notes that they are "pretty much best friends… about as good as you could get in a family" (Evans, 2014, 02:48). However, given that they are both single and ready for marriage, one can assume that a similar friendship outside their family is

off-limits. The bond between parents and children is strong given Gloriavale's family-oriented lifestyle.

Hopefully from the discussion above, the reader can draw parallels between the Gloriavale community and the Southland speakers in Villarreal et al., (2021). Both communities exhibit gender segregation in multiple domains such as education and the workforce. Furthermore, because of dramatic gender roles and segregation in the community, this may contribute to dramatic changes across the lifespan of Gloriavale members. Although it is impossible to objectively value gender segregation in the community without going into the community itself. However, the documentaries and news reports reflect their gender roles uplifted by the community's biblical principles. The information provided suggests that children are brought-up in a shared gendered space at school and home, but from a young age they are taught about their roles in the community. More intense gender segregation may occur when children are considered 'adults', as young as 12 years old. At this age, children are considered ready for marriage, thus they are 'singles' in the community and singles are kept as separate as possible with other singles outside their immediate family.

2.5.3 Isolation at Gloriavale

"We love being together and separate from the outside world…" - Angel, young Gloriavale member ("Q&A", 2018, 02.31).

To establish the isolation status of Gloriavale, and to eliminate any researcher bias, understanding the community's isolation status is discussed against the criteria listed in Schreier (2009, 2017): geographical, social integration, and sociopsychological.

Geographically, it has been mentioned how the community moved to a more isolated area of New Zealand in 1991, "tucked away from the rest of the world" (Lee, 2011: 112). Sargisson & Sargent (2004: 74) further support this, claiming they moved to an "isolated part of the South Island". Getting to Gloriavale has been described as a "densely bush-clad drive along winding gravel roads", typical of the West Coast (Lee, 2011). Gloriavale is 60 kilometres (around a 90-minute drive) to the closest mainland population, Greymouth. It is not impossible to get to Gloriavale by any means, but no one can get there by accident or just pass by; the drive there is very intentional. Measuring Gloriavale's geographical isolation should not be limited to its typology, as Schreier (2009, 2017) suggests. It is equally as important to look at the legal

boundaries Gloriavale possesses. Gloriavale's property is legally private, and spectators can only drive so far towards the community until they are met with locked fences, marking the perimeter of Gloriavale's private land ("Campbell Live Series 2015", 2015). Thus, Gloriavale's geographical isolation is bound by its typology, located in a more remote part of the South Island with a moderately difficult drive towards the location specifically, and legally, where the community privately own the 1700 ha land.

Due to this greater isolation status at Lake Haupiri, Gloriavale is relatively more self-sufficient. They harvest and cook their own food, sew their clothes, teach at a school on-site, give birth within the community, and financially support themselves with their farming and aircraft businesses (Gloriavale Christian Community, 2020; "Money", 2018). In one documentary, young community members Angel and Dove, discuss the differences between 'wants' and 'needs', explaining that "we've got everything we need", suggesting the community can provide for itself ("Q&A", 2018, 12:25). Thus, social interaction with outside populations is mostly (but not completely) irrelevant because outside reliance is not necessary for their survival. This leads to Schreier's (2009) next isolation criteria, social integration.

The extent of Gloriavale's social integration has shifted parallel with their move to Lake Haupiri due to greater geographical/legal boundaries. As mentioned, Gloriavale's self-sufficiency lowers the need for outside contact and assistance. Most contact Gloriavale has with the outside takes place within their community, which Schilling-Estes (2002) suggests is a factor in maintaining dialect variation. Any contact regarding their businesses is allocated to a small number of members. Occasionally, two or three members take the three and a half-hour drive to Christchurch (east-coast of the South Island) to buy supplies such as clothing materials. Anne, an older Gloriavale member, who was filmed travelling to Christchurch noted that "I don't really like coming to Christchurch much. It's not that I mind the people - it's just that it's not us" (Evans, 2016, 19.39). If members need medical assistance which the community cannot provide (e.g., emergency childbirth situations, medical appointments) such members will go into Greymouth but arrive back to the community without haste. They claim to have a small aircraft business which offers scenic flight charters over the South Island, however, the extent to which this business is currently used is unknown.

The Gloriavale community prides itself on their concerts and musical performances they provide for the public. The community usually hosts a (within-Gloriavale) concert every two years for outsiders. However, they did not have a concert in 2020. Additionally, some members of the community venture into Greymouth to perform at Greymouth's annual Waitangi Day Picnic. Television documentaries, the latest of which were filmed in 2018, always happen within the

community and highlight the same few families/members of the community. Unfortunately, much of this media has brought negative attention to the community. In turn, the community claims "we do not seek publicity nor do we believe that the media exists to promote the truth" (Gloriavale Christian Community, 2020). This aligns with Sargisson & Sargent (2004: 75) who write that hostile media attention can lead to community inversion and so it is no surprise that Gloriavale is suspicious of outsiders' intentions.

Gloriavale does not oppose modern technology, but instead uses it to their advantage, particularly in their business sector (Lee, 2011). However, certain devices they have (such as iPads and computers) are refunctionalised to suit their specific purposes. The internet is not free to use, and any incoming information or media about the outside world is monitored and controlled by the Shepherds. Therefore, recent years have only heightened Gloriavale's isolation as they are lowering the social integration they may have with speakers of non-isolated communities.

Lastly, Schreier's (2009) sociopsychological strata, or the belief of one's isolation, needs to be examined for Gloriavale. Because interviewing members in the community is outside the scope of this research, cautious assumptions will be made about the isolation perspective of inside members. The community does recognise that they are highly self-sufficient and 'away' from the rest of the world, which may initiate a foundation of self-isolated beliefs ("Self-sufficiency", 2014). Much controversy arises where Gloriavale claims that people are free to leave the community, but ex-members strongly believe they are brainwashed into staying ("Campbell Live Series 2015", 2015). The community do not necessarily believe they are "cut off from the main body" in terms of describing themselves as a cult or sect (Gloriavale Christian Community, 2020). However, their Christian teachings often result in members believing the 'outside' is nothing but sin, adultery, drug use, and violence (Tarawa, 2017). As a result, most members disassociate themselves from the 'outside', hoping to remain independent from outsiders, upholding a 'us vs them' distinction. A dichotomous view of the world is typically common in groups like Gloriavale. Sociological literature highlights that many new religious movements are characterised by clear, sharp boundaries such as the 'us vs. them' ideology at Gloriavale (Barker, 2015). Thus, Gloriavale's perception of their own isolation is interlinked with their Christian identity. Wherein, being a Gloriavale member is synonymous with isolation and independence.

2.5.4 Previous Gloriavale Research

Surprisingly, there is very little research on the Gloriavale community, both linguistically and socially (Kendall, 2017). Much of the sociological research (Sargisson & Sargent, 2004, 2017) was explained above so the only known linguistic-oriented case study will be explained now.

Kendall (2017) notes the salience of an unusual MOUTH vowel in the Gloriavale documentaries and investigates the shifts of the diphthong over time. Kendall obtained MOUTH formant values from first and second generation community-born members. Kendall also gathered the formant values for the TRAP, KIT, DRESS and PRICE vowels to better map MOUTH shifts in a vowel space. To maintain environment uniformity, Kendall limited the tokens to vowels which were preceded by a plosive. In turn, only using the word *about* for their MOUTH vowel, but using *get* for DRESS and *bit* for KIT, which are both unstressed and/or stop words. To exclude gender from their analysis, they limited the data available so that the number of tokens was balanced between men and women. As a result of the above, the final token count of MOUTH was very low (2 tokens each for first generation males and females, and 2 tokens each for second generation males and females).

Their results suggest the first generation of Gloriavale speakers had a closing MOUTH diphthong, while the second generation had a more open MOUTH diphthong - unlike that of NZE which have closing or centraling MOUTH vowels. Kendall suggests the open MOUTH variant was present in the settlers of Gloriavale and became more realised over time due to Gloriavale isolation, resulting in its saliency by the second generation. Kendall further claims that although the realisation of an open MOUTH vowel is very unlikely the result of an in-group identity, although it is possible this variant is associated with Gloriavale. Kendall acknowledges that there is a large scope of Gloriavale research - both in what type of phonetic realisation to explore, and the size of its data.

Along with the methodological issues pointed out above (mostly regarding the small amount of data) Kendall's rationale for excluding gender and identity contrasts with most of what has been discussed in this chapter. Although MOUTH vowel shifts may not be predicted by gender in NZE, given our knowledge about gender and identity influences on language, and the distinct gender division that personifies Gloriavale's philosophy, it seems unreasonable to not at least investigate gender differences of MOUTH as a direct *consequence* rather than a direct *result*.

2.6 Aims, Research Questions and Hypotheses

In sum, Gloriavale may be an under researched goldmine for sociolinguists due to their unique social landscape. Additionally, the lack of research currently on the Gloriavale community opens a multitude of opportunities and research enterprises. The discussion above also highlights three main areas of study that no one has yet to link in one piece of research. NDF and koineization research has yet to implement isolation and gender segregation effects in newly formed communities, meanwhile gender research has yet to incorporate its effect on koine processes in such communities and isolation research has not focused on New Town communities undergoing extreme koineization. For example, Kerswill & Williams (2000) investigate the role of children in New Town koine but not the role of gender and isolation (though isolation is suggested to some extent given the role of social networks). Villarreal et al., (2021) comes close to the Gloriavale community in terms of gender segregation but does not delve into isolation and new dialect formation. Schilling-Estes (1997) does investigate the role of isolation *and* identity in the Ocracoke community, suggesting the use of certain variants is predictable by such factors, however the socio-historical values of the community are unparalleled to Gloriavale, and her research does not include dialect formation theory. Kendall (2017) does perform some research on Gloriavale, however, this research is very limited and does not account for sociolinguistic factors such as isolation and gender. In turn, this leads to the overall research question of this thesis:

> *1) What linguistic processes can be observed in a relatively new, isolated, and gender segregated community?*

Some sort of hypothesis would need to be taken from literature of the three, respective domains - New Town koine, isolated communities and language, and gender and language change. The koineization discussion in Section 2.1.1, involving the inclusion of social factors such as speaker identity, population demographics, and social networks, realises that accommodation processes, and the levelling and focusing of variants can occur somewhat rapidly in the right conditions (with a near-homogenous dialect forming by the third generation). Thus, it is possible that Gloriavale parallels other New Town koines, with rapid vowel shifts and assimilation towards the majority demographic (either Australian or New Zealand variants) with regards to other social factors. Furthermore, it may be possible that language change occurring in the community is due to unstable language variation within the lifespan of Gloriavale members, despite such speakers reaching linguistic maturity. The context of the community may allow for such change which has not been observed in previous literature because of the unique nature of Gloriavale's settlement and livelihood. Given Gloriavale is a relatively more isolated community, with its population growth highly dependent on birth rates than recruiting new members, isolation literature would suggest that

such a strong-ties community to be slower in language change (Milroy & Milroy, 1985). However, these slow changes do not deter the survival of unique variants and if new variants are introduced in the community, they may spread at a faster rate for the same close-ties reason (Kerswill & Williams, 2000; Schilling-Estes, 1997). This contrasts to that of NDF and koine processes, making it difficult to formulate a hypothesis. This leads to two isolation-related sub-questions directly questioning Gloriavale:

2a) How do vowel shifts at Gloriavale compare to that of a more open community?
2b) (How) does Gloriavale's increased isolation influence their vowel changes over time?

Question 2a is related to the survival and directionality of the vowel variants, while question 2b is related to the rate of change apparent over three generations. Kendall (2017) argued that Gloriavale is different to NZE, and since this is the only research done so far on Gloriavale, it may be hypothesized that the results for this thesis also show vowel shifts and the rate of those shifts to be different from an open community in New Zealand. Furthermore, one may expect Gloriavale to display some (rapid) vowel shifts in the community's settlement years due to koineization and NDF processes, but these shifts may become slower as they become more isolated.

In addition, the gender segregation factor needs to be included. Female speakers are said to lead language change based on communicative strategies and larger social networks - but how would this play-out in an isolated community with limited, but shared, networks? Prestige may not account for gender differences because women in the community do *not* want to climb the social ladder, even though they are socially disadvantaged. However, the older women may have a higher status among the women given their age. Villarreal et al. (2021) highlight this leads to differences in speaker's grammar, based on their gender separation of Southland speakers. So, if gender variation is striking in Gloriavale, how does this equate to koineization processes which aim for linguistic homogeneity? This leads to a third sub-question targeted at Gloriavale:

3) (How) does gender (particularly gender segregation) influence Gloriavale's vowel changes over time?

Given Villarreal et al., (2021) provides gender separation which most closely resembles Gloriavale's gender segregation. Thus, their findings lead this thesis into hypothesizing that men and women at Gloriavale should show differences in their vowel shifts and realisations, with the possibility of some accommodation or focusing due to the koine nature of the community.

The aim of this thesis is to discover and explore contact-induced changes that intercept with isolation, identity, and gender factors. One may argue that the attempts made so far in this thesis to illustrate how different the Gloriavale community is, in turn, makes investigating them pointless and redundant if they are 'so different' from most other communities. Why bother looking into such a niche community if the findings do not contribute to wider society or linguistic practice? This research argues its validity for three reasons. First, is the idea that if one community like Gloriavale exists, there are surely others that do too. For example, the Amish people, which show many parallels to Gloriavale, exist, but much of the research conducted on them is regarding bilingualism, rather than identity, isolation, and gender (see Adkins, 2011; Keiser, 2015; Thompson, 1994). Second, is that no-one has yet to explore dialect-contact changes, identity, *and* isolation, and the Gloriavale community would provide insight into this. And third, which relates to the isolation myths discussed in section 2.4, is that isolated communities provide rich insight into language variation and change. Gloriavale should be no exception to this fact, and instead, they may provide new insights which are relevant to language variation and change as a whole.

Chapter 3

3. Methodology

This chapter first describes the process undertaken to obtain the Gloriavale and comparative corpus speech data. Next, is an explanation regarding the participants in each corpus, dividing them by ‘generations’ to allow for an investigation of the vowel changes over an apparent time construct. Following this is a step-by-step filtering process of the data, derived from Brand et al., (2020), extracting the highest quality vowels for analysis. A manual analysis of 10% of tokens for each vowel was conducted, finding diphthongised FLEECE vowels and discrepancies in the THOUGHT/FORCE and LOT tokens. Further, the Euclidean distance is defined here and its application to the data is explained. The ‘Lobanov 2.0’ normalisation process is then described (Brand et al., 2020), followed lastly by the data modelling approach to find significant predictors in the data.

3.1 Obtaining and Transcribing Vowel Data

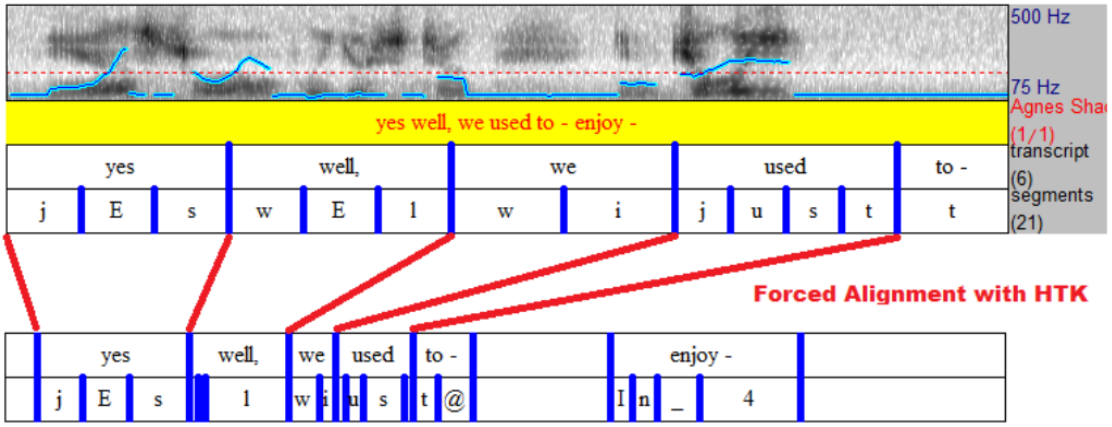
3.1.1 Gloriavale Data

This study gathered speech data from Gloriavale speakers in publicly available documentaries, docuseries, and news reports. Specific speech data is limited to community members who were interviewed in the community, as in, they are/were all current members at the time, and the actual recordings occurred at Gloriavale. Most of the speech data are monologues or prompted dialogues, while only a handful of the data were interview-style dialogues or conversations between Gloriavale members or reporters. The data were obtained from three online, accessible platforms. *TVNZ On Demand* is a New Zealand online television server for previously aired TV shows. This server contained the most Gloriavale data, with one documentary spanning back to 1982, and more recent documentaries/docuseries ranging from 2015-2018. *ETV* is an online video platform available to university students and contains more news reports/journalistic interviews with Gloriavale members, spanning from 2007-2015. Finally, one documentary was made available on YouTube and was uploaded in 2011. For the TVNZ and ETV data, a chrome capture extension was used to record the audio of the videos and save the audio output as WAV files. This is a free, Google chrome extension, and information is available here https://github.com/arblast/Chrome-Audio-Capturer. The YouTube documentary was captured using

a tool called youtube_dl (available for download here https://ytdl-org.github.io/youtube-dl/download.html). This tool runs on CMD/DOS prompts and captures the audio and closed captions/transcriptions of videos. The audio saves as WAV files while the closed captions save as a VTT extension. To make the closed captions accessible for editing, a VTT-to-TextGrid converter was used to convert the file into a TextGrid extension (available for download here https://github.com/nzilbb/ag/blob/master/bin/vtt-to-textgrid.jar?raw=true, created by Robert Fromont, NZILBB).

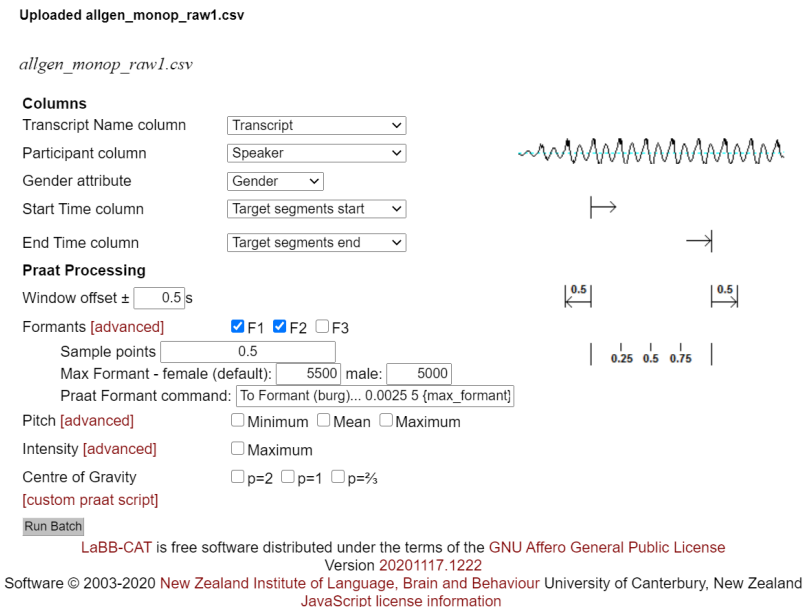
ELAN (EUDICO Linguistic Annotator http://www.lat-mpi.eu/tools/elan/), developed at the Max Planck Institute for Psycholinguistics (Nijmegen, The Netherlands) was used to manually transcribe the audio for the TVNZ and ETV data. For the YouTube data, both the audio WAV file and TextGrid file were opened in ELAN to manually fix spelling errors and/or incorrect speech alignments. Once manual transcription was completed, the data was uploaded into *LaBBCAT* (Fromont & Hay, 2012). LaBBCAT is an online repository tool where users can upload transcriptions and audio files to browse/extract specific linguistic information. For this study, a 'Gloriavale' corpus was created, and all the aforementioned files were uploaded to said corpus. When uploading data, participants can be attributed with different social indexes such as their generation group, gender, and speech rate. This allows for data to be searched by specific categories (i.e., by generation). Next, LaBBCAT's *HTK alignment* feature was used. When initially uploaded, text files are segmented evenly across a transcript, making it unaligned with the actual audio. In turn, this feature is a tool that uses HTK alignment to align phonemes (at an utterance tier level) to each individual sound in an audio file (see *Figure 5*) (Young et al., 2006). Some parts in the transcripts could not be HTK aligned as LaBBCAT sets up an 'audio standard' at the beginning of a transcript, and so if parts of that transcript deviate from that standard, alignment cannot be done. Those segments were aligned manually. Finally, LaBBCAT automatically coded for syllabic stress to each transcript using LaBBCAT's CELEX capabilities.

Figure 5. An example of LaBBCAT's HTK tool, where a text file begins as evenly spread across its audio file, then after HTK alignment, the transcript and segments are aligned to match the audio (sourced from http://labbcat.sourceforge.net/#Who_wrote_ONZE_Miner).



Once all the above steps are complete, data can be extracted from LaBBCAT. Using LaBBCAT's 'search' section, all participants were selected, and a 'layered search' was able to extract specific vowels. All monophthongs in any environment were extracted. LaBBCAT created a CSV file where each row represents a single vowel token and provides speaker information (e.g., gender, age category), transcription information, corpus information, and some vowel information (i.e., which vowel it is, the time that token starts and ends in the transcript, and what words precede and follow the target vowel word). Next, LaBBCAT's *process with Praat* function was used to extract the F1 and F2 values for the halfway point of each vowel token (see *Figure 6*). By entering '0.5' in the *Sample points* text box, the formant values will be measured at 50% of vowel production, or the middle of the vowel's start and end time. Once LaBBCAT has measured the formant values at this sample point, another CSV file is created, adding in the formant values with the previous information. Finally, LaBBCAT's *insert data* feature was used to retrieve what phonemes occurred immediately before and immediately after each vowel token. This is added to a new, and final, CSV file.

Figure 6. A screenshot depicting the *process with Praat* function which extracts formant values at a specific time(s) of vowel production.



3.1.2 Comparative Corpus - North Canterbury Data

To investigate how Gloriavale speakers compare to a non-isolated speech community, a comparative corpus needs to be used to represent such a group of speakers. This thesis selects speakers from the North Canterbury region who have transcribed audio files in the QuakeBox corpus (for more speaker information, see Section 3.2.2). The data from the QuakeBox corpus followed a similar, but shorter, method than above. The majority of transcripts have already completed HTK alignments (along with the completion of the steps prior to HTK alignment), so the data extraction process was the same as the Gloriavale data. Wherein, the selected participants were 'layered searched' and a CSV file extracted the target segments (i.e., all monophthong vowels in all environments) along with target information, and participant, corpus, and transcription information. Next, that CSV file was uploaded into LaBBCAT's *process with Praat* function and vowel formants were measured at 0.5 sample point (or 50% vowel production). Finally, LaBBCAT's *insert data* feature extracted the phonemes that immediately preceded and followed the target segment.

3.2 Participants

3.2.1 Gloriavale Corpus

This thesis analyses three generations of Gloriavale members, set up with the assumption that the apparent time construct would enable to investigate vowel change over time at Gloriavale. The three generations are the settler generation, the first generation, and the second generation. Grouping a speaker into one of the three generations is based on when a speaker joined Gloriavale or at what point in time they were born into the community. This is to counter any age effects that may occur, considering that Gloriavale has large, sparsely aged families and very often one family may span two or three generations (e.g., one mother in a documentary was having her twelfth child while her eldest son was having his first). Furthermore, dividing generations this way bears in mind the criticism of Trudgill et al. (2000) by Meyerhoff (2006), mentioned in section 2.1.1, who noted that settler families in New Zealand often had large age gaps, thus, dividing generation with a 'parent-to-child' type model does not fit a genuine linear generational model. Birth year estimates of the members are provided so when choosing speakers for a comparative corpus, those speakers will be around the same age (per generation) as the Gloriavale speakers.

The settler generation are members who established the community in their adulthood, joining Gloriavale between 1969-1974 (birth year estimation 1926-1951). All speakers in the settler generation were either born in New Zealand or Australia, to match the biggest demographic of people who founded Gloriavale and because most data available for this generation consisted mainly of New Zealand or Australian speakers. The first generation either joined the community as children with settler parents (when the community was still in Springbank) or they were born into the community by settler parents (birth year estimation 1960-1975). As previously mentioned, due to large families at Gloriavale, the second generation are either children of the first generation (and grandchildren of the settler generation) or children of the settler generation. To account for this difference, the second generation is grouped by members who were born 5 years before, during, or 5 years after the community moved to Lake Haupiri, West Coast (birth year estimation 1986-1995). Having divided the generations this way may also enhance the ability to investigate isolation effects on language change at Gloriavale, as each generation provides specific isolation states of the community throughout-time. Wherein, the settler generation occupied the community at its least isolated, the first generation grew up in a slightly greater isolated community, and the second generation comprises the community's most isolated living conditions. This study also intended to include Gloriavale's third generation (current children at Gloriavale), but there were insufficient amounts of data for these speakers.

There are eight speakers in each generation with a minimum of 30 seconds of speech time (4F, 4M). Deciding to only pick eight speakers was due to the limited data available for the first

generation, as not many members in this generation have speaker data over 30 seconds. In turn, each generation has eight speakers, where each speaker has the highest amount of talk time in their generation group (per gender). *Table 1* depicts the amount of talk time per generation in the Gloriavale corpus.

Table 1. Amount of Gloriavale speech data time divided by generation and gender (note that years in brackets represent birth year estimations). Read as hours: minutes: seconds.

	Settlers (1926-1951)	**First generation** (1960-1975)	**Second Generation** (1986-1995)
Female speakers	4	4	4
Female talk time (HH:MM:SS)	00:05:33	00:08:25	00:44:22
Male speakers	4	4	4
Male talk time (HH:MM:SS)	00:15:00	00:04:36	00:24:39
TOTAL speech time	**0:25:33**	**00:13:01**	**01:36:48**

3.2.2 North Canterbury Corpus

To investigate how Gloriavale speakers compare to a non-isolated speech community, a comparative corpus needs to be used to represent such a group of speakers. Speakers for this comparative corpus are taken from the QuakeBox corpus. Institutes at the University of Canterbury collaborated to run the QuakeBox project, after the 2010/2011 Canterbury earthquakes. The organisers rebuilt a shipping container into a recording studio and moved the container over different areas of Canterbury. The public were able to get into this recording booth, and record (visually and/or orally) their earthquake story. Many of these recordings have been transcribed and uploaded to an online corpus, ‘QuakeBox’, which is inside an instance of LaBBCAT. Given how recent these recordings are, and how wide the age range is of participants, this corpus seems the best to create a non-isolated comparative corpus.

Such a corpus needs to be as similar as possible to the Gloriavale corpus, for an accurate comparison of the data. This study selected speakers who are monolingual English speakers, are of NZ European ethnicity, and grew up in the North Canterbury region. The majority of QuakeBox participants are from Canterbury, so participants were further refined to those from North Canterbury. Refining participants who grew up in this non-isolated region may make comparison

interesting, given that Gloriavale was founded in North Canterbury. Due to a large number of Quakebox participants, selecting comparative speakers were further refined to those whose speech articulation rate was closest to the mean articulation rate, per generation, of Gloriavale speakers. This furthered the comparison corpus to be similar to the Gloriavale community.

Eight QuakeBox participants, four males and four females, from four different age categories, were chosen to represent three generations of North Canterbury speakers. Speakers aged 18-25 are comparable to the second generation at Gloriavale, and speakers aged 36-45 are comparable to the first generation at Gloriavale. To ensure an accurate comparison for Gloriavale's settler generation, four speakers (2F, 2M) aged 66-75 and four speakers (2F, 2M) aged 76-85 were selected for comparison. This better matches the large birth year estimation (1926-1951) of the settler generation. *Table 2* depicts the amount of talk time per generation in the North Canterbury corpus.

Table 2. Amount of North Canterbury speech data time divided by generation and gender. Read as hours: minutes: seconds.

	66-85 year olds	**36-45 year olds**	**18-25 year olds**
Female speakers	4	4	4
Female talk time (HH:MM:SS)	00:22:48	00:39:54	00:19:17
Male speakers	4	4	4
Male talk time (HH:MM:SS)	00:15:40	00:18:18	00:13:07
TOTAL speech time	**00:38:28**	**00:58:12**	**00:32:24**

3.3 Data Filtering and Analysis

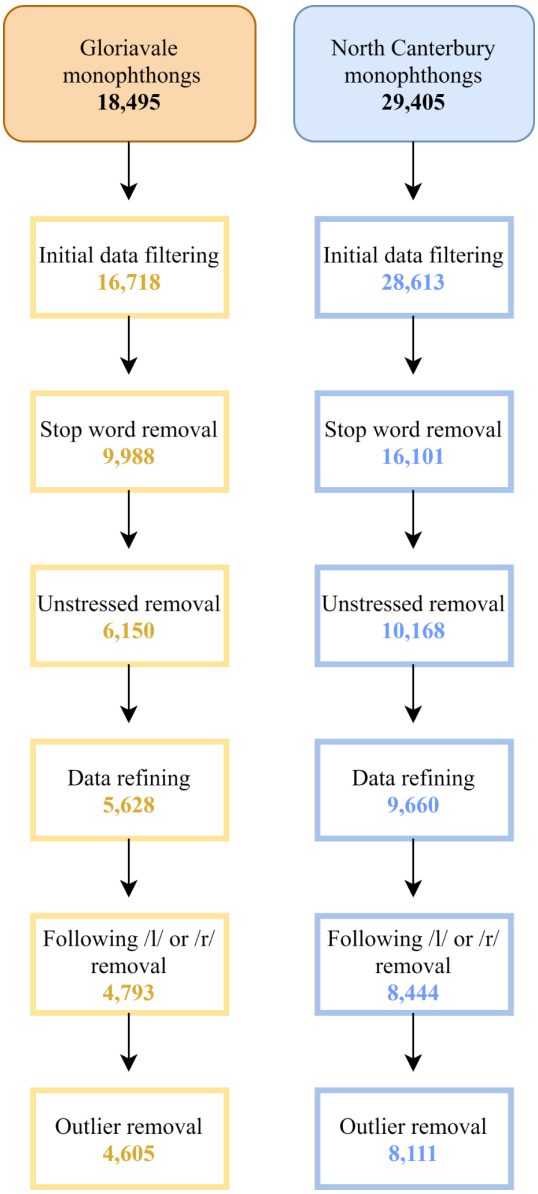
3.3.1 Filtering Procedure

To ensure that vowel tokens are of the highest quality for analysis, a filtering process was conducted to filter out poor vowel tokens due to misalignment or mismeasurement in the extraction process. The R program was used for such a process (R Core Team, 2020). Much of the filtering process for both Gloriavale and North Canterbury data is derived from the process used by Brand et al., (2020). Brand et al., (2020) conducted a study on co-variation of monophthongs in NZE, so

given its relevance and recency, it seems fitting to model this filtering procedure off them. The process began with *data filtering* where any F1 tokens that measured over 1000 Hz were excluded, as this indicates that HTK alignment was incorrect. The next step was *stop word removal*, which removed any tokens that matched a modified stop word list provided by Brand et al., (2020). The original stop word list in Brand et al., (2020), did not account for stylistic transcription differences (e.g. ‘um’ may have been included, but not ‘um . ’, ‘um -’ or ‘umm’) and some common stop words were not included in the list (e.g. ‘if’, ‘it’ll’, ‘isn’t’) so these adjustments were made. The next step, *unstressed data removal*, removed any tokens which were coded as unstressed when retrieved from LaBBCAT. After this, *data refining* occurred, and for the Gloriavale corpus, this step excluded speakers who were not needed for analysis. Additionally, FOOT vowels were evaluated at this point, as Brand et al., (2020) excluded FOOT from their analysis due to relatively low FOOT counts. Currently, there are 158 FOOT tokens in the Gloriavale data and 271 FOOT tokens in the North Canterbury data (this is relatively low compared to the token counts of all other vowels), so this paper also excluded FOOT from analysis. There are also small amounts of happY tokens, and given their unstressed nature, such tokens were also removed in this step. Following this step was *environmental removal*, where tokens which were followed by /l/ and /r/ were excluded as these environments are known to influence vowel production and quality in NZE (Hay & Sudbury, 2005, as cited in Brand et al., 2020; Thomas & Hay, 2005 as cited in Brand et al., 2020). The last step was a *statistical outlier removal*, where tokens that were 2.5 standard deviations outside the mean per vowel per speaker were removed. The filtering process is visualised in *Figure 7*. The final token count is shown in *Table 3***.**

Manual analysis of the remaining tokens checked 10% of tokens per vowel where the formant measurements were cross-checked with their corresponding Praat waveform. This was to ensure the formants were measured correctly, that HTK alignment was good at the vowel midpoint, and that tokens that should be filtered out were indeed excluded. It should be noted here that this thesis purposely did not code for any other preceding and following environments except for following /l/ and /r/ (for the purpose of token exclusion). The reason for this is due to the small amount of Gloriavale data available and thus, the high likelihood that data modelling processes would fail as a result.

Figure 7. Diagram depicting the filtering process at each step, where the number represents the number of tokens remaining per step.



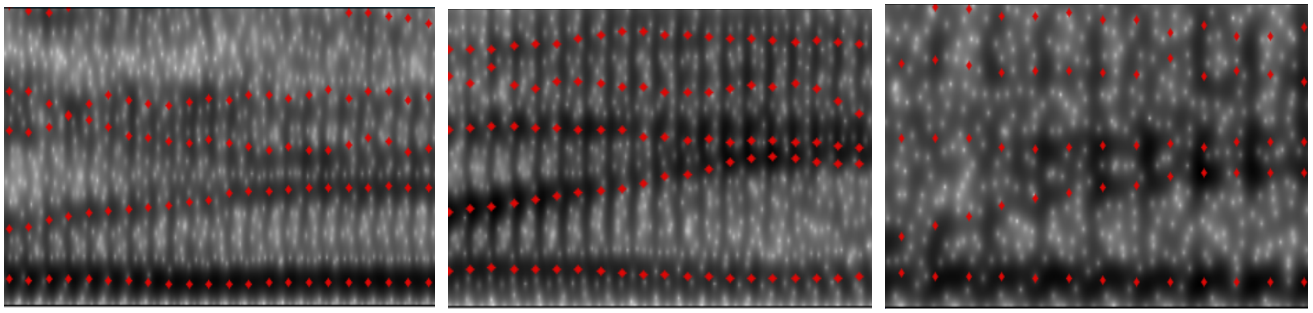
3.3.2 Manual Vowel Analysis

The manual analysis uncovered some interesting vowel productions, but also issues with the formant measurements from Praat, taken by LaBBCAT. In particular, FLEECE, THOUGHT/FORCE, and LOT vowels obtained formant values that were hindering the methodological processes and data graphing/modelling. All other vowels showed correct formant values and HTK alignment, and so will not be discussed.

3.3.2.1 FLEECE

When undergoing manual analysis, it became apparent that Gloriavale speakers are diphthongizing FLEECE. Current literature suggests FLEECE diphthongization is occurring in NZE (Allan & Starks, 2000; Maclagan & Hay, 2007), so seeing it occur in Gloriavale suggests the fast rate of vowel changes occurring in the community and the ability for isolated communities to follow variation trends occurring simultaneously in non-isolated open communities. Out of the FLEECE tokens analysed (n = 78, around 10% of total tokens), 30% were diphthongs across all generations (see *Figure 8*). Preliminary investigations of FLEECE suggest two possible reasons why FLEECE is diphthongizing at Gloriavale. The first is that the settler speakers of Gloriavale, and/or possibly children of settlers who joined Gloriavale as children already had FLEECE variation, sometimes producing FLEECE as a diphthong, and this realisation has survived and 'passed down' to Gloriavale's first and second generations. Alternatively, a diphthongized FLEECE was *not* a variant when Gloriavale established, but over time as NZE speakers diphthongized FLEECE, the variant spread to the isolated community. However, analysing FLEECE as a diphthong is outside the scope of this paper, so this thesis chose to maintain the midpoint formant values for FLEECE. This matches previous studies conducted on FLEECE in NZE.

Figure 8. Examples of FLEECE diphthongisation across three generations at Gloriavale.



Settler speaker ***First generation speaker*** ***Second generation speaker***

3.3.2.2 THOUGHT/FORCE and LOT

One issue that presented itself when plotting Gloriavale's vowels was the large F2 range of both THOUGHT/FORCE and LOT. As depicted in *Figure 9*, the two vowels have a formant range at Gloriavale which is totally unrealistic to any dialect of English, especially that of NZE - which is visible in the North Canterbury corpus. With such wrong formant values, this results in incorrect

normalisation of all vowels. Manual analysis of 10% of THOUGHT/FORCE (n = 39) and LOT (n = 59) tokens found a handful of issues in the data and/or in the formant measurements completed via LaBBCAT.

Out of the LOT tokens analysed, around 25% had clear, good-quality audio and clear visuals in their spectrograms, but the formants measured by LaBBCAT were miscalculated and could not be retrieved. An initial reaction to the THOUGHT/FORCE vowel's production could be the diphthongization of it in the community, which is not an unfathomable suggestion, given that FLEECE is also diphthongizing. However, many THOUGHT/FORCE tokens had poor audio quality, aligned with poor spectrogram visuals and/or wrong HTK segment alignment which contributed to incorrect formant measurements. To account for these unusual vowel measurements, it was decided to remove THOUGHT/FORCE (n= 315 for Gloriavale, n = 629 for North Canterbury) and LOT (n = 538 for Gloriavale, n = 819 for North Canterbury) tokens from analysis. The final data token count is tabulated in *Table 3* where Gloriavale is seen in the top panel while North Canterbury is seen in the bottom panel.

Figure 9. Normalised vowel plot showing THOUGHT and LOT vowel distribution by gender (three tokens per vowel to represent the three age categories).

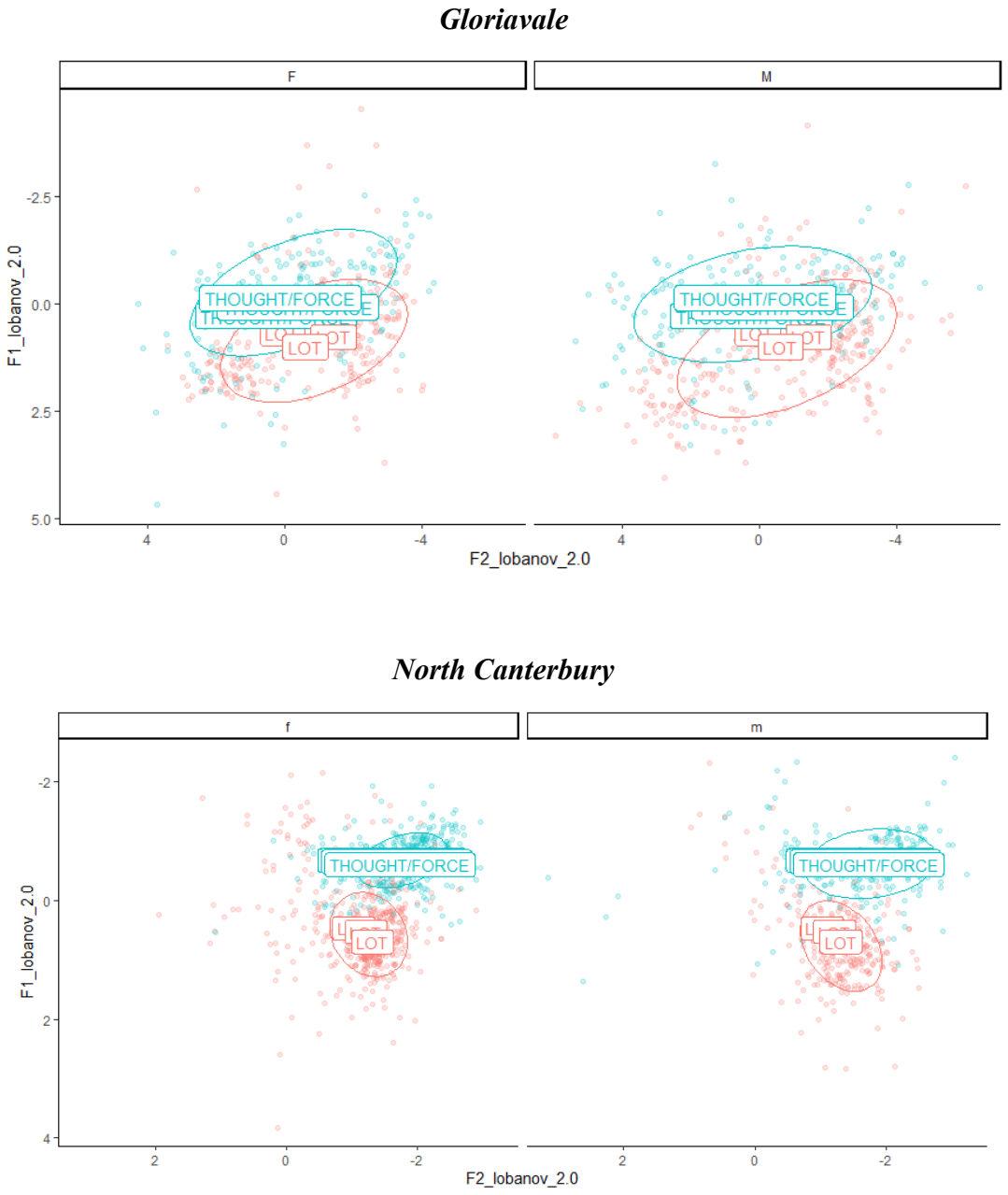


Table 3. Final monophthong token amounts of Gloriavale and North Canterbury speakers (divided by vowel type and generation group). *percentage total is slightly off due to rounding percentages to 2dp.

Gloriavale corpus			**North Canterbury corpus**		
VOWEL	N Tokens	%	VOWEL	N Tokens	%
BATH/START	150	4.00	NURSE	350	5.25
NURSE	211	5.62	BATH/START	403	6.05
GOOSE	285	7.60	GOOSE	509	7.64
TRAP	372	9.91	TRAP	820	12.31
KIT	610	16.26	KIT	958	14.38
STRUT	614	16.36	FLEECE	1034	15.52
FLEECE	683	18.20	STRUT	1090	16.36
DRESS	827	22.04	DRESS	1499	22.50
TOTAL	**3752**	**99.99***	**TOTAL**	**6663**	**100.1***
GROUP	N Tokens	%	GROUP	N Tokens	%
Settlers	975	25.99	66-85	1879	28.20
First gen.	432	11.51	36-45	2795	41.95
Second gen.	2345	62.5	18-25	1989	29.85
TOTAL	**3752**	**100**	**TOTAL**	**6663**	**100**

3.3.3 Euclidean Distance

A section of Brand et al's., (2020) filtering process excludes participants whose vowels all substantially 'overlap' each other when graphed in a vowel plot; in turn, such vowels are indistinguishable from each other. Seeing as this would affect vowel analysis, Brand et al., (2020) calculates the Euclidean distance from the vowel centroid for all speakers. This algorithm measures the dispersal of a speaker's vowels, so a resulting low Euclidean value indicates low vowel dispersal (i.e., overlapping vowels). Brand et al., (2020) excluded participants' whose Euclidean

value was -2 standard deviations from the population's mean Euclidean distance. This thesis calculated the Euclidean distance for Gloriavale and North Canterbury speakers, however, no speaker was -2 standard deviations from the corpus average, so all speakers remained in the dataset.

3.4 Normalisation - 'Lobanov 2.0'

Brand et al., (2020) adapted the Lobanov normalisation method to a variant which better suited their corpora data (Lobanov, 1971). The goal of Lobanov normalisation, in essence, is to remove the physiological effects a speaker may have on their formants so that the tokens of speakers with physiological differences can then be analysed together or compared to one another (Kendall, 2017). The formula normalises by subtracting the raw formant value from the mean of all formants and then divides it by the standard deviation of all formant's values. However, as Brand et al. (2020) highlights, this method does not suit datasets that contain casual speech from hundreds of speakers which, in turn, adds up to a multitude of token variability between vowels and speakers. And so, the current Lobanov method is biased to normalising vowel tokens towards those with higher token counts overall, which does not suit datasets with high token variability.

Thus, Brand et al's., (2020) adapted formula normalises by calculating the mean per vowel type, then taking the mean of all those vowel type means and subtracting the final mean from the raw formant value. This value is then divided by the standard deviation of the mean of means to give their normalised formant value. They labelled this formula Lobanov 2.0. Given that this paper is using corpus data (and thus, high token variability) and that for the most part, Brand et al. (2020) filtering methods worked coherently for both data sets (Gloriavale and North Canterbury comparative corpus), all the data undergoes the Lobanov 2.0 formula for normalisation.

3.5 Data Modelling

All data were analysed using R, and R packages *lme4* (Bates et al., 2015) and *effects* (Fox & Weisberg, 2018). Mixed-effects linear models were fit by hand, using ANOVA comparisons to find the best model. The dependent variables were each vowel's F1 and F2 values (linear regression), run as separate analyses per formant. The independent variables are *age* (separated by the three generations, labelled as 'OLD', 'MIDDLE', and 'YOUNG'), *corpus* (North Canterbury or Gloriavale) and *gender* (male or female). Random effects of *speaker* and *word* were included in each model. Thus, there were sixteen models to run analysis on. Model fitting began as a three-way interaction between the listed effects. As in, to what extent is a vowel's formant values predicted by

speaker age, gender and location, where the predictors are significant by themselves and/or as interactions with each other. ANOVA model comparisons dropped non-significant interactions (p value = >0.05) successively. Main effects of age, gender, and corpus were left in the models, regardless of significance.

Chapter 4

4. Results

This chapter first explains the patterns of significance in the data modelling, and the statistical findings are discussed throughout the chapter via three data modelling phases. The findings are first explored by comparing Gloriavale and North Canterbury, highlighting how greater variation is found in Gloriavale. This warrants the need to explore Gloriavale's variation in greater depth, and in particular, their gender variation (which is supported by the significance of gender in the second data modelling phase). To investigate whether this variation is actually an artefact of Australian speakers in the data, the Australian settlers are compared to the New Zealand settlers. The vowel shifts are compared between the data which includes Australian settlers and data which excludes Australian settlers, and a third round of data modelling highlights the vowel shifts are not an artefact of Australian settlers. Out of interest, a preliminary analysis of Hopeful Christian's vowels (the community's founder) is plotted and explored.

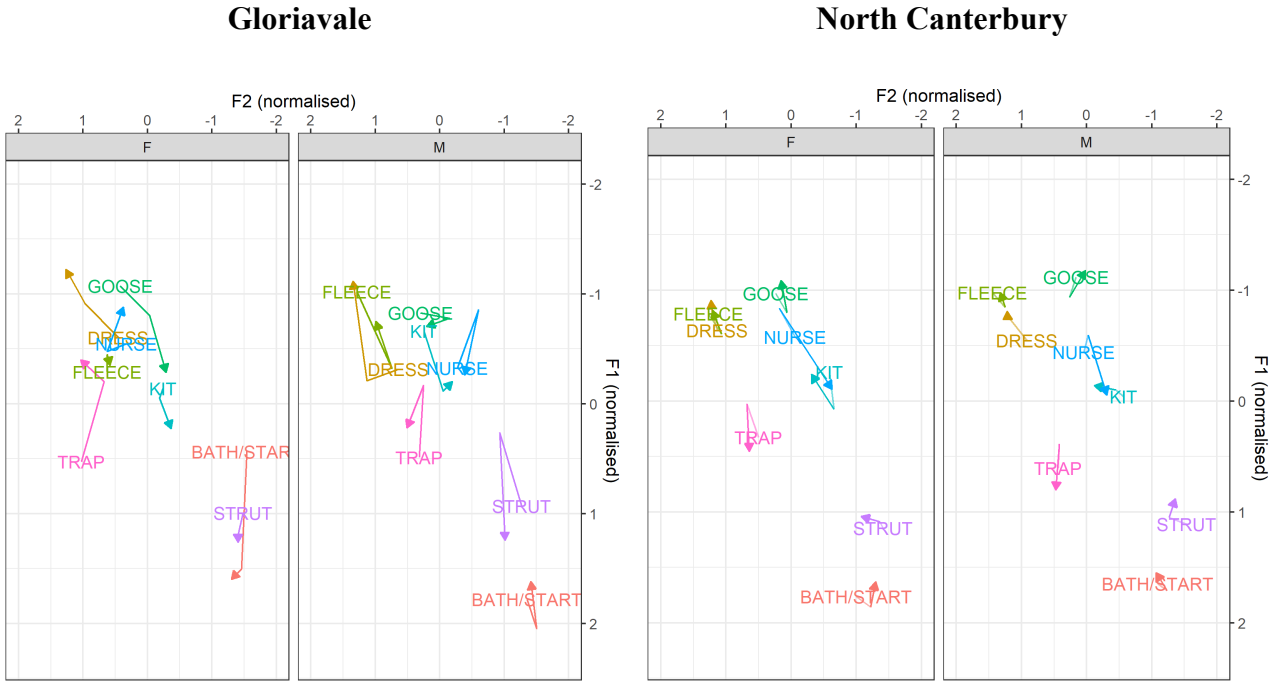
4.1 Significance in Data Modelling

The first round of the data modelling process above returned mostly significant results. Out of the sixteen models (one model per vowel formant), twelve included statistically significant effects involving age, gender, and/or corpus. Which independent variables were found to significantly predict which vowel formants are discussed below. The model plots are provided in Appendix 1.

4.2 Comparing Gloriavale and North Canterbury

To investigate the extent of Gloriavale's vowel change over time, and whether this change is concurrent in a less isolated NZE community, vowel plots can suggest comparisons between the corpora. *Figure 10* compares vowel shifts over time in relation to gender, with the Gloriavale speakers on the left panel and the North Canterbury speakers on the right panel. The lexical class identifies the 'starting point', which represents the oldest/settler speakers, the midpoint of the arrow (often visible by any arrow bends) represents the middle-aged/first generation speakers, and the arrowhead represents the current vowel status of the youngest/second generation speakers. Thus, the arrows represent the individual vowel shifts over three generations.

Figure 10. Vowel shifts between Gloriavale and North Canterbury speakers.



4.2.1 Vowel Similarities and Differences

The first visible difference between the two data sets is that Gloriavale vowels are shifting at a faster rate and with greater range than North Canterbury vowels. Notably, the shifts at Gloriavale are more radical, with a huge change in F1 and F2 values over time. For example, in *Figure 10*, TRAP and DRESS for both Gloriavale men and women shift tremendously over three generations, with a noticeable contrast in vowel production between the settler generation and the second generation. North Canterbury shows similar shifts, like with NURSE, but not to the extent of Gloriavale speakers. These are examples of monotonic, progressive change over time, where the direction of change remains similar across speaker generations. However, there are also notable shifts in vowels where the first generation speakers diverge from the settler speakers, but the second generation tend to reverse and converge their vowels to similar positions of the settler speakers. This occurs in both corpora, particularly for GOOSE in Gloriavale men and North Canterbury men and women.

4.2.2 Significance in Data Modelling

The results from the mixed-effect linear regression model suggest that corpus is a significant predictor in most vowel shifts. Out of the sixteen models tested, twelve were statistically significant in either corpus, gender and/or age - eleven of which included corpus as a predictor.

Three-way interactions (*corpus * age * gender*) are statistical predictors for the movements of DRESS F1, FLEECE F1, KIT F1, GOOSE F1, and BATH/START F1. Thus, a three-way interaction significantly predicts the raising and/or lowering of the vowels. Two-way interactions of *corpus* and *gender* can predict the shifts of TRAP F2 and NURSE F2, while a two-way interaction of *corpus* and *age* significantly predicts the movement of DRESS F2, TRAP F1, and KIT F2. Another two-way interaction of *age* and *gender* predicts the shifts in STRUT F2. Thus, except for TRAP F1, all two-way interactions are predictors of fronting and/or backing of the vowels. *Corpus* was the only one predictor which statistically predicts the movement of FLEECE F2, without the interaction of *age* and/or *gender*. In turn, GOOSE F2, NURSE F1, STRUT F1, and BATH/START F2 could not be statistically predicted by any of the variables. However, *corpus* must be a significant predictor in the vowel shifts presented in *Figure 10***,** as the majority of statistically significant models include corpus as a predictor.

4.2.3 Summary

The success of data modelling suggests the following. First, that Gloriavale and North Canterbury are indeed different. Given the relevance for *corpus* as a predictor in the statistical models, this supplements the previous discussion detailing the differences between the two corpora. This echoes the results from Kendall (2017), who noted that the MOUTH vowel at Gloriavale suggests Gloriavale is different from NZE more generally. Secondly, the significance of *corpus* by *age* highlights that Gloriavale is undergoing greater vowel shifts over time, more so than at North Canterbury. Due to this, the findings above suggest that comparing the two corpora will not yield enough detail or discussion about the immense vowel changes occurring at Gloriavale. Although comparing the two allows for interesting observations about isolation effects on vowel change, perhaps the more intriguing data is within the Gloriavale community itself. Thirdly, the statistical significance of a three-way interaction of *corpus, age,* and *gender* suggests that sound change is progressively different by gender in Gloriavale than North Canterbury, hence supporting the need to investigate Gloriavale more in depth with a focus on gender variation.

4.3 The Linguistic Story at Gloriavale

4.3.1 Age and Gender Differences

Investigating age and gender in relation to one another within Gloriavale may provide a clearer, more realistic insight into the vowel changes over time at Gloriavale. It also allows for

discussion about the influence of gender segregation on vowel change in the community. *Figure 11* plots vowel shifts diachronically between women and men at Gloriavale. The vowel means per gender per generation group is depicted in *Figure 12.*

First, there are multiple vowel shift similarities between genders at Gloriavale. Despite some specific differences, the front vowel shift is prevalent in male and female speakers. In particular, the raising of DRESS and lowering of FLEECE. Although FLEECE is shown raising again by the second generation in male speakers, it remains lower than their DRESS vowel, as depicted in *Figure 12*. The TRAP vowel, despite the lowering between the first and second generation in the men, is more raised in the second generation than the settler speakers.

The low vowels, STRUT and BATH/START, depict an interesting shift between genders. For the settler generation, the vowels are in opposing spaces between men and women, but by the second generation, the vowels are in the most similar acoustic spaces to each other than the previous generations. This is a result of significant BATH/START lowering in the female speakers, so that it was produced lower than their STRUT vowel in the first generation, similar to the male speakers. The male settlers begin with their STRUT higher than their BATH/START vowel, however they diverge at the first generation before converging again to their similar starting positions in the second generation. These shifts are visible in *Figure 11*, also.

The GOOSE and NURSE vowel shifts are perhaps the most diverse between men and women at Gloriavale. For the women, GOOSE lowers and backs significantly, becoming more central in the second generation. Whereas for the men, the GOOSE marginally shifts, becoming slightly more backed and lowered in the first generation, then slightly more fronted and lowered again in the second generation. For settler speakers, the NURSE vowel is in similar acoustic spaces, only slightly more fronted in the females. The vowel is raised in the second generation by both genders but continues to raise in the female speakers into the second generation, whereas the male speakers lower the vowel in the second generation, to a vowel height most similar to the settler speakers.

The KIT vowel lowers and centralises for both genders, but the vowel changes occurring around KIT often sees the encroachment of the KIT vowel space, particularly in the male speakers. In the male settler speakers, KIT begins in a similar acoustic space to GOOSE, but lowers and centralises by the first generation. Although this shift is the opposite direction to GOOSE and NURSE, the rising TRAP encroaches on KIT's vowel space now. By the second generation, KIT only shifts slightly (back and high), but the lowering of NURSE back to its initial position invades KIT’s vowel space.

Figure 11. Change over generations by gender at Gloriavale.

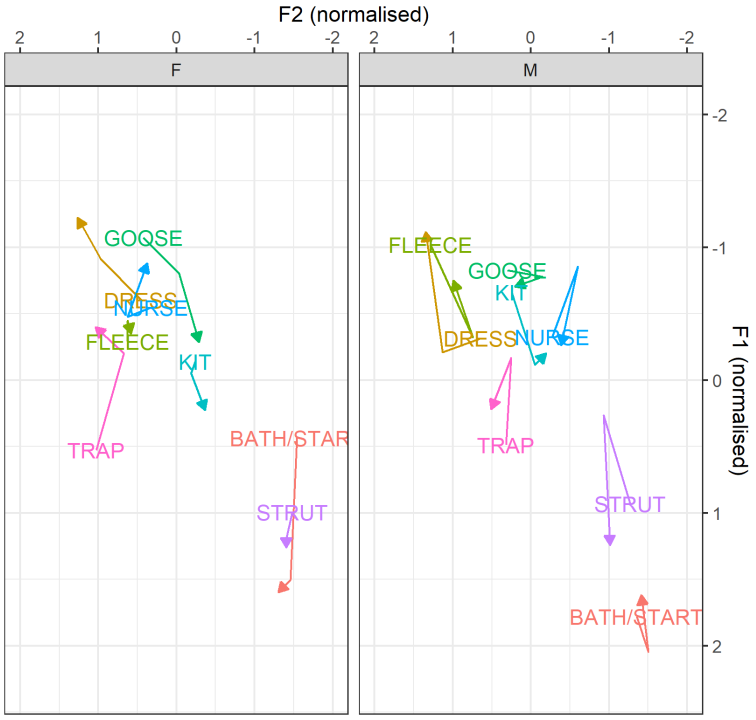
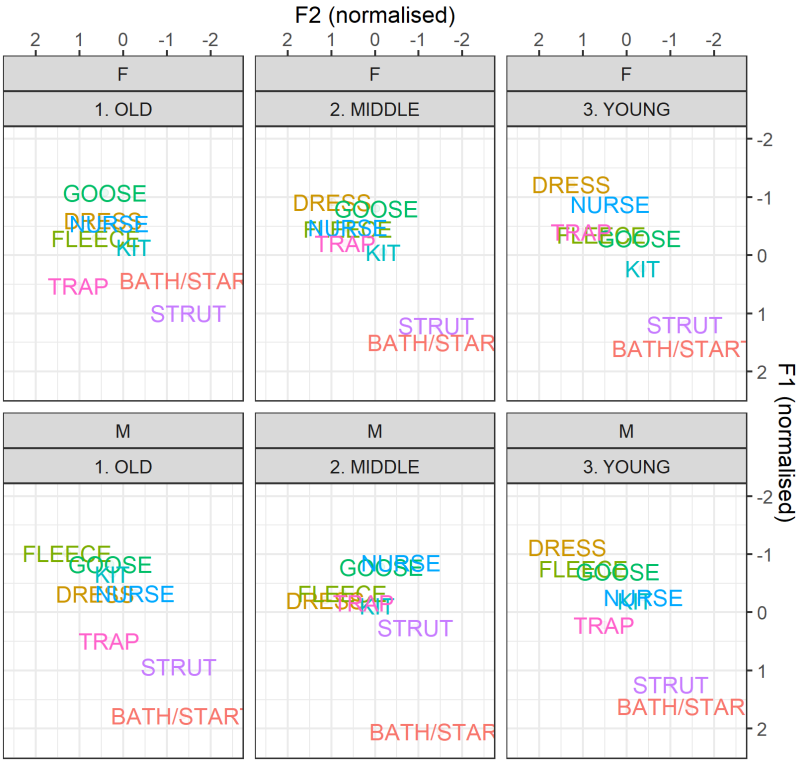


Figure 12. Individual mean vowel plots per generation per gender at Gloriavale.



The rate of change is another interesting factor which differentiates between gender and generation. For the female speakers, both figures suggest rapid vowel change from the settler generation to the first generation, then less significant shifts between the first to second generation.

This pattern only occurs for the KIT vowel in the male speakers. The rate of vowel shifts is mostly consistent between generations for Gloriavale men, as many vowels revert back to their original positions in the second generation. However, Gloriavale women show exceedingly greater shifts in their vowels between the settler and first generation, but the rate of shifts visibly slows between the first and second generation.

4.3.2 Data Modelling within Gloriavale (I)

Another round of data modelling occurred for Gloriavale-only data. This model followed the same procedure as described in Section 3.5, but without *corpus* as an independent variable. The model for this round remained a mixed linear effect model, where each vowel's F1 and F2 values were run as separate analyses. For this round the independent variables are only *age* (settler generation, first generation, and third generation) and *gender* (male or female). Model fitting began as a two-way interaction between the listed effects. Again, ANOVA model comparisons dropped non-significant interactions (t value = >0.05) successively and main effects of age and gender were left in the models, regardless of significance.

The results of data modelling within Gloriavale highlight the influence and predictability of gender on the vowel shifts presented. Out of the sixteen models, eight were statistically significant in either *gender* and/or *age*. A two-way interaction of *gender* * *age* predicts the shifts of FLEECE F1, TRAP F2 and BATH/START F1. The predictor *gender* had statistical significance on the realisations of DRESS F1, DRESS F2, TRAP F1 and GOOSE F1. While *age* significantly predicts the NURSE F2 shifts. Therefore, *gender* was the more powerful predictor of vowel changes within Gloriavale.

4.3.3 Interim Summary

There are overarching vowel changes which are shared between the men and the women, such as the general movement of the front vowel shift, the lowering of KIT, and the STRUT-BATH/START vowels in their closest proximity to each other by the second generation. However, one significant difference between the speakers is that in the female speakers, vowels often remain in the same shift direction from which it started over generations (e.g., continuously raising, continuously lowering). Whereas, for many of the male speakers, vowels start shifting in one direction between the settlers and first generation, but this direction changes between the first- and second generation. In turn, the second generation males produce vowels in very similar

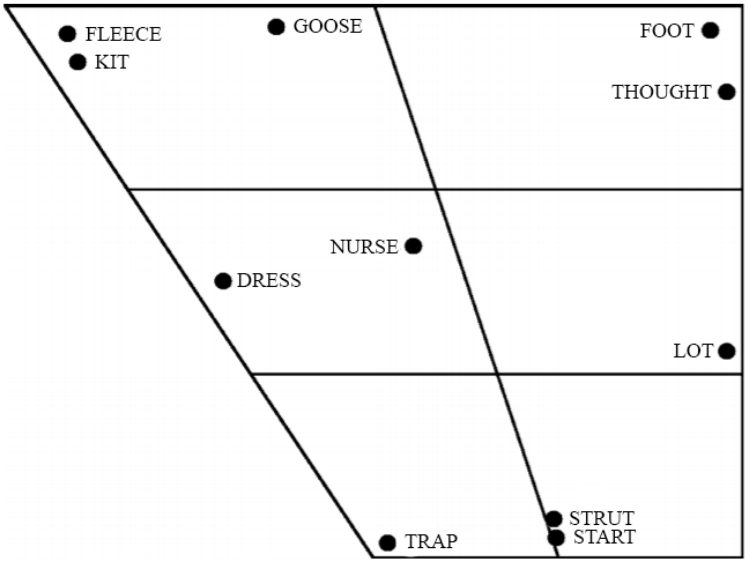
acoustic spaces to the male settler generation. The results of data modelling support the claim that men and women are different at Gloriavale, and the direction of their vowel shifts is predicted by gender.

4.3.4 Settler Speaker Nationality Differences

Perhaps the rapid vowel changes at Gloriavale are a result of mixed dialects during Gloriavale's settlement. As described in Chapter 2, the founder of the community, Hopeful Christian, was an Australian himself, and some of the original shepherds come from other English-speaking countries such as Canada, America, and England (Gloriavale Christian Community, 2020). Although the data did not include settler speakers of such other minority countries, Australian and New Zealand settler speech was included in the data (due to the greater amount of speech time for Hopeful Christian, and the lack of data/information of only NZE settlers). Thus, it is possible that the apparent shifts occurring at Gloriavale are due to conflating settlers of two different dialects into one speech group.

Australian vowels (AusE, also known as Standard Australian English, SAusE) differ slightly to that of New Zealand English. As *Figure 13* depicts, AusE realises a very raised FLEECE and KIT vowel, giving it the salient *feesh and cheeps* realisation, or the *fush and chups* New Zealand counterpart (Hay et al., 2006). Like NZE, AusE FLEECE is often diphthongized but is not always realised this way (Cox & Palethorpe, 2007). The AusE TRAP and DRESS vowels are somewhat raised, but not to the extent of NZE. The GOOSE vowel is exceptionally more fronted and raised in AusE, within the same height range at FLEECE and FOOT. Their NURSE vowel is fairly centralised, and their BATH/START and STRUT vowels are in very similar acoustic spaces, low and central.

Figure 13. Australian monophthong vowel space. *Note,* sourced from Cox & Palethorpe (2007) with permission.

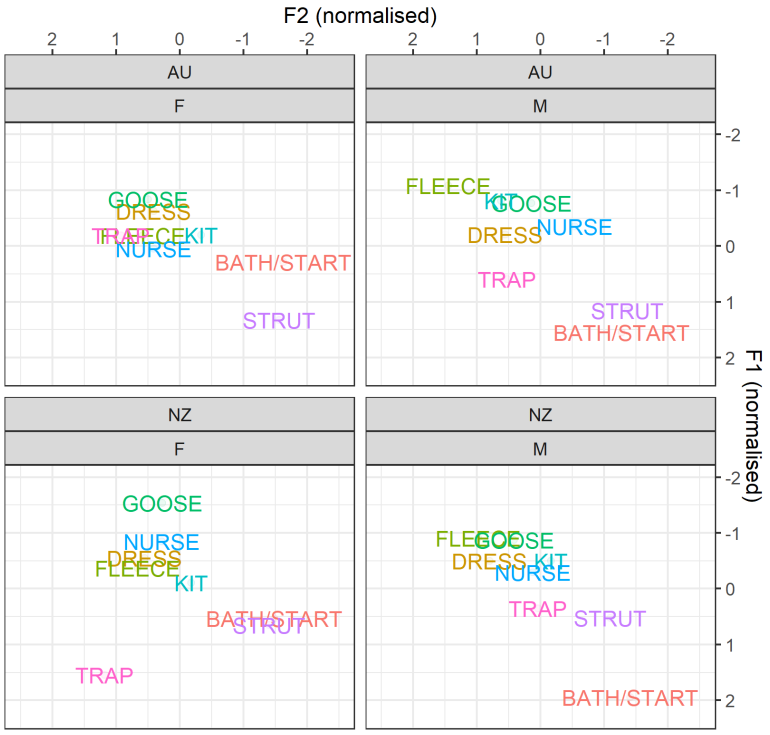


To investigate this dilemma, the settler speakers were coded by 'nationality', originating either from 'New Zealand' or 'Australia', and their vowel spaces were constructed accordingly. Four out of the eight settler speakers were identified as Australian, where two were confirmed Australian or 'Australian immigrants' (two males) while the other two were assumed Australians based on listening to their speech and identifying salient Australian variants (or variants which seemed non-New Zealand like) (two females). It is very possible that some of the other settlers were of Australian origin but have lived in New Zealand (and/or Gloriavale) for so long that they underwent a 'second dialect acquisition' where their phonemes shift to that more like NZE due to years of accommodation and frequency effects (Nycz, 2013). The mean vowel plots per assumed nationality are visible in *Figure 14*.

The mean vowel spaces of Australian speaker settlers show both similarities to AusE and NZE. For AusE male speakers, FLEECE is most fronted and highest, typical of AusE, followed by a high and fonted KIT vowel. However, their DRESS, TRAP, and NURSE vowels are perhaps higher than one might expect from an AusE speaker. The AusE male GOOSE vowel is somewhat fronted, closer to FLEECE, but this is typical of both nationality groups. The STRUT and BATH/START vowels are in acoustic spaces typical of AusE speakers. Perhaps the more recent speech of AusE male settlers (with speech data taken up to 47 years after the establishment of Gloriavale) is a result of invasive NZE shifts, such as the front vowel shift, but some salient Australian features remain in their original acoustic space. This would explain the raised TRAP and DRESS vowels, while the prominent high FLEECE and KIT vowels are AusE-grounded. When

compared to the NZE male settlers, AusE speakers have a greater vowel space overall. The NZE male settlers have a crowded high and front acoustic space, with FLEECE, DRESS, and GOOSE vowels nearly overlapping with each other. The NURSE and KIT vowels are more centralised in the NZ male settlers, with STRUT also centralizing, creating a greater acoustic difference between itself and BATH/START.

Figure 14. Mean vowel plot of settler speakers at Gloriavale by nationality and gender.



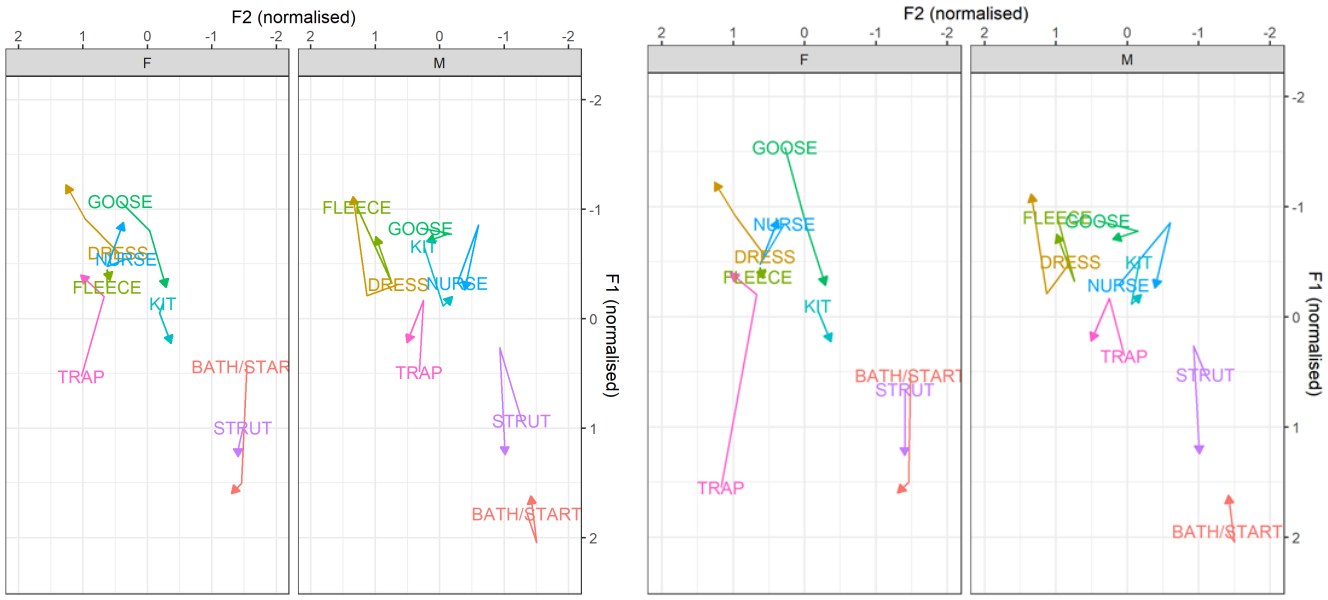
The AusE female settlers are a little more difficult to detangle. Their GOOSE and DRESS vowels are nearly overlapping, and their TRAP, FLEECE, KIT, and NURSE vowels are in close acoustic space to one another. Their BATH/START vowel is raised more than their STRUT vowel, not typical of AusE. Perhaps their acoustic vowel space is not an accurate representation given the lack of AusE female settler data (one AU female did not have any BATH/START tokens). However, within the close proximity of the vowels, there are some similarities between the two nationalities. Their GOOSE vowel is the highest vowel, and DRESS is only slightly higher than their FLEECE vowel. Both NURSE vowels encroach on the front vowel clustering while KIT remains back and more central. Similarly, the NZE females have a BATH/START vowel higher than the STRUT vowel, but not to the extent of the AusE females. One noticeable difference is the position of the TRAP vowel, which is much lower in the NZE females and higher in the AusE females. Thus, although the unexpected vowel space of both female nationalities may be the result of lacking data (one NZ female did not have any BATH/START or GOOSE tokens), the intriguing

similarities can be found.. Alternatively, perhaps the clustered vowels in both nationalities, although unexpected, suggests the females are undergoing a sound change sooner than the males, where the speakers are accommodating to each other, and New Zealand and Australian variants are focusing.

Clearly, the settler generations have some features pertinent to both AusE and NZE. But are Australian settler speakers responsible for the huge shifts that the data suggests are occurring at Gloriavale? *Figure 15* highlights the mean vowel plots of apparent time constructs including (left panel) and excluding (right panel) Australian settlers. The left panel in *Figure 15* is the same as the previous plots presented above (as *Figure 11*).

Figure 15. Mean vowel plots of vowel shifts occurring at Gloriavale. Note that the vowel positions of the first and second generation are equal in both graphs.

Including Australian Settlers **Excluding Australian Settlers**



The vowel shifts depicted in *Figure 15* show an uncanny resemblance between data including and excluding Australian settlers. Noticeable differences between the female groups is the movement of their TRAP and GOOSE vowels, where, in the plot excluding Australian settlers (right panel), the movement of such vowels are tremendously greater than the plot including Australian settlers (left panel). This suggests that including the female Australian settlers raises the overall settler TRAP vowel and lowers overall settler GOOSE vowel. Similarly, the BATH/START vowel begins slightly lower in the plot excluding Australian settlers. Additionally, the position of the NURSE vowel is quite different when excluding Australian settlers, now positioned higher than

DRESS. Overall, however, the position of most vowels is in close proximity for the female group, with the obvious divergences being TRAP and GOOSE.

The men in both plots depict the reversal shift, with some differences in the starting settler positions. Excluding Australian participants, FLEECE and GOOSE are more parallel (interesting as this is more prevalent *in* AusE), and the DRESS vowel is higher, closer to FLEECE. KIT is perhaps the most different vowel between the plots (albeit not much different in retrospect) and is more central in the excluding plot. The clustering of these high front vowels in the excluding plot suggest that Australian settlers contributed to a greater/wider acoustic space in Gloriavale men overall. Additionally, the STRUT vowel is higher in the plot excluding Australian immigrants.

4.3.5 Data Modelling within Gloriavale (II)

To statistically test for any Australian influence of the results presented, a third round of data modelling occurred within Gloriavale. The model was the same as that presented in *4.3.2*, with *gender* and *age* as predictor variables. However, this time the modelling excluded Australian settler data. If many differences between the two models occur, this would suggest AusE *is* somewhat accountable for the shifts at Gloriavale. However, this was not the case as no effects were lost. All but two of the models remained the same, with the previously mentioned vowels having the same statistically significant predictors of either *gender* and/or *age*. The two models which returned different results is that of TRAP F1 and GOOSE F1, which now are significantly predicted by a two-way interaction of *gender * age* rather than only *gender* in the previous model. This reflects the biggest differences for the females, in *Figure 15*, with GOOSE and TRAP showing the greatest shifts when excluding Australian settler data.

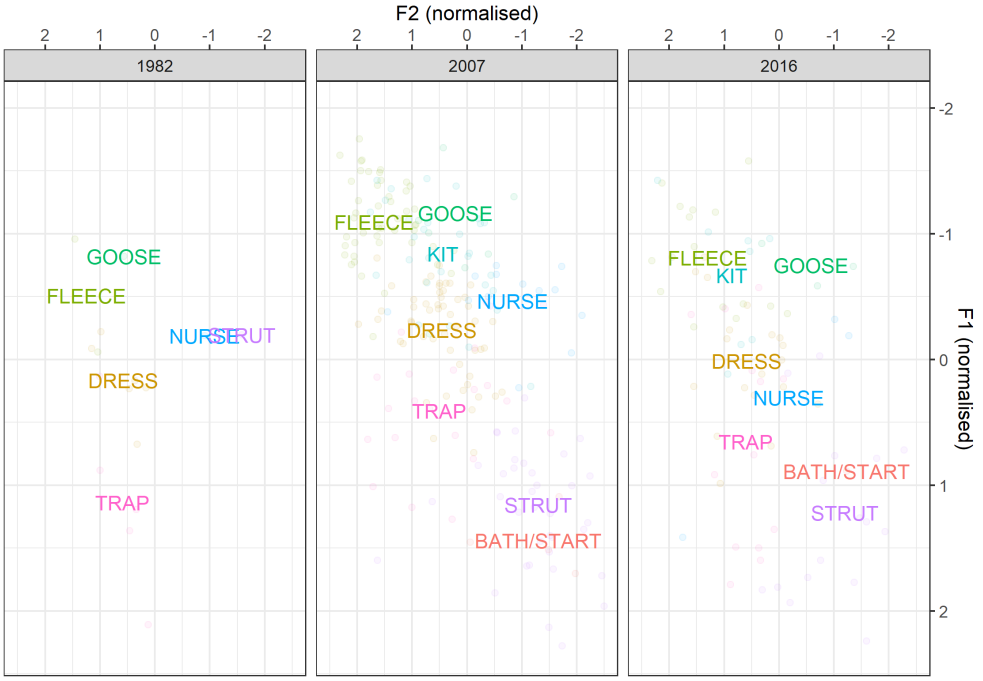
4.3.6 Interim Summary

The third round of data modelling results highlight how Australian settlers are not responsible for the observed vowel shifts occurring in Gloriavale. In fact, as *Figure 15* suggests, it is possible the settler speakers in this data may have accommodated and focused their speech to one another since Gloriavale's settlement, that they now realise some vowels within a NZE vowel space and some in an AusE vowel space. To investigate such processes would mean looking at a real-time construct of settler speakers. The available data for an in-depth investigation is lacking, but this paper attempts to investigate the plausibility of such by looking at one speaker - the community's founder, Hopeful Christian.

4.3.7 Hopeful Christian

Hopeful Christian has a small amount of speech data spanning from 1987 to 2007 to 2016. From the community's settlement in 1969, these dates represent 13 years, 38 years, and 47 years of living inside the community, respectively. His speech data underwent the same filtering and normalisation processes described in Chapter 3. The mean vowel plot per year date is depicted in *Figure 16.*

Figure 16. Mean vowel space of Hopeful Christian at three different time points after founding Gloriavale.



As noted, the lack of data for 1982 is prevalent in *Figure 16* as no KIT or BATH/START vowels survived the filtering process. Further, vowel tokens, indicated by the faint-coloured dots in *Figure 16*, are minimal in the 1982 panel. However, the tokens that are salvageable still provide interesting insight.

Interestingly, the vowel plots suggest that Hopeful's vowels begin to shift to closer resemble that of NZE (a raised TRAP, DRESS, and FLEECE vowel) in 2007, but by 2016, much of these vowels return to similar acoustic spaces to that in 1982. In turn, these vowels return to a more Australian-like vowel space, highlighted by the high KIT vowel which is very close to his FLEECE vowel, and the repositioning of TRAP, DRESS, and GOOSE to some extent. Hopeful's STRUT vowel in 1982 is the same acoustic space as NURSE, however, this seems more a reflection of the

available data than his actual vowel space. His STRUT vowel is lowered significantly by the 2007 data and remains stable between the 2007 and 2016 data. Although bearing in mind the data for this is limited, it does highlight some interesting patterns. The shifts in Hopeful's vowel space are comparable to the shifts for Gloriavale men in general - where some vowels in the second generation match closer to those in the settler generation. Perhaps being the founder and leader of the community resonates in this respect, as the men may be overly influenced by him resulting in linguistic accommodation to his speech. This is discussed further in Chapter 5. Furthermore, Hopeful's vowel space may also highlight how unstable language is in adulthood, despite linguistic maturation, and perhaps the context of the community exaggerates this instability.

4.4 Summary

Chapter four presents the findings of this thesis from a multitude of angles and possibilities. First, the results from Gloriavale were compared to North Canterbury, depicting the differences in vowel shifts between the two corpora. And as the data modelling suggests, Gloriavale is indeed different to the more open North Canterbury community, whereby Gloriavale has undergone greater and more intense vowel shifts over time. Secondly, the results investigated Gloriavale more in-depth, discussing the gender and age differences in vowel changes and pronunciation. The second round of data modelling supports the claim that gender may be the biggest predictor of sound change within the community, rather than the age of its members. One possibility for the dramatic vowel shifts was the inclusion of Australian settler speakers in the data. Therefore, a third account proposed in this chapter looked at the vowel spaces of Australian and New Zealand settlers, and how the shifts at Gloriavale compared when including and excluding the four Australian settlers. A third round of data modelling highlighted no change in effect (other than an additional *age* effect on GOOSE F1 and TRAP F1), which prompts the notion that including both Australian and New Zealand settlers in the Gloriavale data does not sufficiently account for the range of shifts present at Gloriavale. Finally, Hopeful Christian's vowels were examined, as his speech data provides intriguing real time data. Like the male trend, Hopeful is reversing the same vowels in the latest speech data (2016), matching the same acoustic spaces as the earliest speech data (1982), but not the mid data (2007). Although not all the vowels in question were apparent in the earliest data, Hopeful's vowels may be key to understanding the language variation apparent in the Gloriavale community.

Chapter 5

5. Discussion

This chapter begins by reviewing the key findings from the results and highlights how they may be interpreted as language change per generation, or as language variation at Gloriavale per 'life stage' over a speaker's life span. The four key findings are then discussed in detail, exploring the two interpretations proposed above. A unified account is provided for Gloriavale, suggesting that the life variation account is perhaps a more accurate account for the male findings but the female findings are more accurately accounted for as regular language change over time. The importance and influence of isolation is prevalent for both corpus and gender accounts. The research questions are then answered, but are modified for clarity given the two accounts. The chapter finishes by exploring the limitations of the thesis and proposes future research for both a real-time and apparent time construct study.

5.1 Key Findings

The results presented in Chapter 4 can be refined to four key findings: (1) the degree of difference between generations suggest isolation effects between Gloriavale than North Canterbury; (2) the increased variability is not an artefact of assumed Australian speakers in the first generation; (3) there is significant gender difference within Gloriavale with monotonic change in women but reversing shifts in men; and (4) the variability in Hopeful Christian's vowels at different ages closely resembles the variation between generations in male speakers. These key findings will be discussed in greater detail throughout the chapter. Each finding is questioned as either a true representation of linguistic change over time or whether the vowel realisations per generations reflect different life stages of the members in the community, governed by social networks, personal goals, and identity constructions. Three distinct life stages can be observed at Gloriavale and are discussed below as they may assist in the interpretation of the four key findings.

5.1.1 Life Stages at Gloriavale

While this thesis used generations at Gloriavale to represent different years of birth, the speakers are also at different life stages. The settler speakers, born between 1926-1951, are in their old life stage, the first generation speakers, born between 1960-1975, are in their middle-aged life

stage, and the second generation speakers, born between 1986-1995, are in their young adult life stage. *Figure 17* highlights the speaker generation to their corresponding life stage.

Figure 17. Gloriavale generation and their estimated age and life stage based on the most recent documentaries from 2018.

GENERATION	ESTIMATED AGE (in 2018)	LIFE STAGE
Settler	67-92	Old
First generation	43-58	Middle-aged
Second generation	23-32	Young

Starting from the young Gloriavale members, the first adult life stage (represented by the 'second generation' in this study) may be fuelled by the need for marriage, the respect from the elders, and the implementation of oneself into the community as an adult member. At this stage, being single members of the community means less interaction with the other gender due to the community's gender segregation. In turn, there may be little linguistic accommodation to the other gender simply due to lack of interaction. The women wait submissively to be proposed to, while the men strive for greater leadership roles to both prove themselves worthy of marriage and to display their ability to become shepherds later in life. Therefore, the young males may associate themselves with the older community members (most likely the settlers) to learn from them and prove their worth. For example, when young Gloriavale member Paul talks about his upcoming marriage and children, he notes that "I've got some great role models around this place..lots of them" (Evans, 2014, 43:17). During this time, single women may foster relationships with other single women within the workplace. Much of their identities would be driven by their 'singleness' and position in the workforce. Once the young members get married, very soon after their courtship, their roles and identities in the community shift quickly to become wife and husband getting ready for children. For example, when Paul, a young male, prepares for his marriage, his father states "his responsibilities and his role is going to change" (Evans, 2014, 06.25). This new stage enhances the need for the young males to take examples from the older members. Furthermore newly-married speakers are faced with new interlocutors as they become part of each other's family.

This shift eventually leads to the life stage apparent in the 'first generation' of Gloriavale members in this study. This life stage consists of continuing to grow a family and upholding their positions in the community (i.e., leaders for the men, submissive wife, child-bearer, and worker for the women). Family lineage may begin to get complicated here, as one family in the documentary

showed a middle-aged mother may be having her twelfth child while her oldest son is having his first child (Evans, 2014). Thus, this life stage is filled with adult-to-child interactions and shifts in family dynamics. It is possible that the men are still striving for the shepherd position at this stage, and their slow step-up in leadership status throughout the workforce implies this. However, much of their attention would be given to their family, lending to their middle-aged identities.

Eventually, this leads to the older member life stage which the 'settler' speakers may represent. The male members may have reached the highest leadership roles in the community or in their respective workforce, and the females are no longer bearing children but continue to work in the women domains. Now in this later life stage, these members may receive the greatest amount of respect from all community members and are the role models of the younger members. This role modelling may contribute to the older life stage identity. The oldest of members prepare to live out their last few years in preparation for their return to God (Evans, 2016).

Evidently, age, as well as gender, is key to the identity constructions in the community, as each life stage presents different social networks and individual goals. Therefore, given the crucial nature of life stage and identity in Gloriavale, this raises the question of whether the vowel variability in Gloriavale is a true apparent-time construct of diachronic change or whether the vowel realisations per generation represent changes in the identity-defining life stages. As this chapter discusses the four key findings, the nature of these findings is first acknowledged as change over time, but then questioned if they are better interpreted as a variability due to social networks and self-identity/role in the community.

5.2 Finding (1): Isolation Effects in Gloriavale and North Canterbury

Setting aside, for the moment, the particular directions of the differences across generations (which will be dealt with in Section 5.4), this section can observe that the overall degree of difference between the generations at Gloriavale is bigger than North Canterbury, for both the men and women. As supported by data modelling, this finding recognises that Gloriavale *is* different to North Canterbury. Both by the realisation of certain vowels between age groups and in the rate and directionality of vowel change. This finding matches and enhances that of Kendall (2017), who also claims that a Gloriavale dialect is different to New Zealand English in some way.

This proposes an interesting question regarding isolation status and its effects on vowel change. The initial intention of comparing Gloriavale to North Canterbury was to investigate the

role of isolation on vowel change (although the communities also differ in other respects). But if language change is generally faster in open communities that have social networks characterised by weak-ties (Milroy & Milroy, 1985) then why is Gloriavale, an isolated community with stronger-ties, showing considerably greater and faster vowel change? This question highlights that the vowel changes occurring at Gloriavale cannot be the sole result of isolation, and that other factors relating to the community must be accounted for, making isolation an unpredictable factor in Gloriavale's case. Although Gloriavale became more isolated in 1991, this does not halt or conserve their linguistic change, as isolation myths would suggest (Schreier, 2009; Schilling-Estes, 2002). The results show that Gloriavale is maintaining their uniqueness even after heightening their isolation, and this is particularly clear in the second generation when the directionality of sound change diverges between the men and the women.

Instead, it is possible that the role of isolation at Gloriavale is causing a unique linguistic effect. Because isolation is inherent to the Gloriavale identity, this may entrench and secure such identity, allowing linguistic variation to occur within the community. Hence, the community sees greater degrees of variation because the secureness of their identity allows for such variation. This reflects the fifth stage of Schneider's Dynamic Model, where once nationhood is realised by both settler and indigenous speakers, this allows for the flourishing of between- and within-community variation (Schneider, 2003). This phenomenon is also occurring in NZE with the rise of regional variation and regional identities (see Marsden, 2013). Therefore, the findings show greater vowel movement in Gloriavale than North Canterbury, due to the complex role of isolation, which in this case, is excelling rather than halting linguistic changes.

In terms of contact-induced changes, initial isolation of the community may have supported the speed of koineization processes due to lower accommodation pressures from external sources (Anderson, 1988, as cited in Schilling-Estes, 2002). Additionally, perhaps the heightened isolation contributed to a fast koineization rate, as accommodation, levelling, and focusing could be fostered without the influence of outside variants. This would suggest isolation is having the opposite effect of what most scholars report. Furthermore, if koineization processes are occuring in the community, perhaps the adult-to-child ratio at Gloriavale is adding to the greater degree of change compared to North Canterbury. As Kerswill & Williams (2000: 74) found in their Milton Keynes koine, a high proportion of children and young people may accelerate the koineization process. Therefore, because Gloriavale has a high proportion of children and young people given their high birth rate, this may have accelerated the koineization process, leading to the greater degree of variation.

5.3 Finding (2): No Australian Settler Data Influence

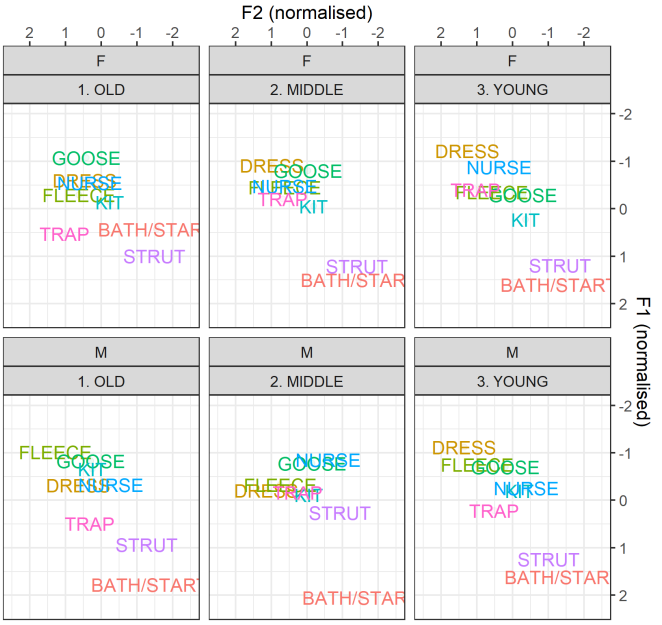
The second finding relates to Section 4.3.4, where data modelling tested whether the vowel changes/variability in Gloriavale is due Australian settler speakers in the corpus data. The modelling highlights that the vowel shifts are not an artefact of assumed Australian speakers. Therefore, reinforcing the notion that the findings are linked to something inherent to the Gloriavale community rather than something about the data itself.

However, this analysis allows the thesis to interpret whether Australian settlers' variants did contribute to a potential new dialect at Gloriavale. If the second generation of Gloriavale speakers represent the most current Gloriavale dialect, assuming the apparent time construct is valid, seeing if their vowels share an acoustic space typical of AusE may suggest those Australian variants survived koineization processes over three generations. *Figure 12* highlights how both men and women have a high GOOSE vowel, parallel with their FLEECE vowel height, which is typical in AusE. However, FLEECE and KIT are typically the highest front vowels in AusE, but this is not the case in the Gloriavale speakers who have a higher DRESS vowel and a lower/central KIT vowel. AusE has a more central GOOSE vowel and a somewhat raised TRAP (not to the extent of the NZE TRAP), which can be interpreted in the Gloriavale men data. The remaining vowels are either indistinguishable from NZE and AusE, or they more closely resemble the acoustic spaces of NZE. Thus, the women show little, if any, Australian variants, while the men may have allowed some Australian variants to survive the koineization process. Therefore, the idea that a Gloriavale dialect is a mixture of the majority settler variants (NZE and AusE) cannot be ruled out, however, little evidence or data can support it. Additionally, one might assume that if Australian variants were contributing to a Gloriavale dialect, then the data modelling would have supported the Australian speaker data and show statistical significance in vowel formants. As the reader will find below, the realisation of AusE-like variants in men may not be due to koineization processes, but rather identity factors and life stage variation.

5.4 Finding (3): Significant Gender Differences in Gloriavale

The gender variation in Gloriavale warrants the need for individual analysis per gender, given the differences in vowel variability across generations. The reversing vowels in the male speakers are discussed first, followed by the monotonic vowel shifts in the female speakers. For ease of reference, *Figure 12* is repeated below as *Figure 18*.

Figure 18. Individual mean vowel plots per generation per gender at Gloriavale.



5.4.1 Reversing Vowels in Men at Gloriavale

If viewing the male results as sound change over time, then over three generations at Gloriavale, the men are reversing many of their vowels. This vowel reversal is an intriguing and unexpected result in the data, however, it is not an uncommon finding in apparent time literature. Strassel & Boberg (1996) found the reversal of 'short-a' tensing in Cincinnati. Of particular interest to this thesis, one of Strassel & Boberg's accounts for their reversal is the identity constructions of young Cincinnatians, trying to distinguish themselves as the northern variety of speech in Kentucky. Perhaps for Gloriavale, the increased media attention heightens speaker's saliency as gender segregated Gloriavale members, thus, the more recent years with increased media attention has catalysed the gender variation in Gloriavale, and male speakers are more effortfully marking their Christian identities. Alternatively, D'Onofrio & Benheim's (2020) investigation of the Northern Chain Shift (NCS) in two Chicago towns found receding TRAP and LOT vowels in their data, unlike the NCS would suggest. D'Onofrio & Benheim argue that while the reversal of these vowels is also occurring at a community-wide level, previous explanation for U.S. vowel reversals is not an adequate account for their data. Instead, they propose that the reversal of NCS features is influenced by "changing demographics and attitudes that evolved together in the community" (2020: 486). Interpreting these findings with the Gloriavale community, perhaps the reversal of male vowels aligns with shifts in the community's attitudes/ideologies alongside the increased isolation status once the community moved to the West Coast. Although their Springbank site provided the necessary physical settlement of the community, their isolation needs were not

completely met, and the rapid increase of community numbers pushed the community to seek out a bigger and more isolated site. The shift most likely disrupted the usual routine of the community for some time, and Gloriavale members, most likely men, may have needed more contact from the outside. Furthermore, it was the men who had to leave the Springbank site to build the infrastructure on the West Coast. In turn, the men may have accommodated to 'outside' variants, bringing them into the community which could have contributed to the progressive sound change from 1969 to 1995 (once the community finally settled). Hence, why the vowel realisations presented in the first generation are more different to the settler and second generation, because at that point in time, the community was undergoing immense changes and this is reflected in their speech. Then, once the community got settled in their Lake Haupiri site, alongside their more grounded isolation status and identity, male speakers were able to retract their vowels to spaces typical of the original settlers, and in turn, the reintroduction of more Australian-like variants. Furthermore, it is possible that their West Coast site, in correlation to increasing numbers, enhanced gender segregation and the desire for gender differentiation, hence the diversion of male and female vowels during the more recent years in the community, with the men reversing their vowels. However, Labov et al., (2013) found that the reversal of /aw/ raising and reversal of two allophones of /ow/ fronting in Philadelphia exemplified that men were always a generation behind these sound reversals than the women. In turn, questioning the likelihood for both Gloriavale genders to show different vowel shifts at the same time and why the Gloriavale men are exemplifying vowel reversal instead of Gloriavale women.

However, as Wagner (2012) suggests, changes that are led by men may suggest age variation rather than diachronic variation. Therefore analysing the men's results as age variation is warranted and may provide a more fruitful interpretation can be given for the male vowel reversal. Therefore, a *Communities of Practice* approach may account for a life stage interpretation of the male variation at Gloriavale.

The Communities of Practice (henceforth CoP) theory is a model used in multiple fields outside of linguistics, such as education, sociology, and anthropology. Eckert and McConnell-Ginet (1992: 464) defines CoP as the following:

> "... an aggregate of people who come together around mutual engagement in an endeavor. Ways of doing things, ways of talking, beliefs, values, power relations-in short, practices emerge in the course of this mutual endeavor".

Lave & Wegner first coined the term as a way of explaining the complex social relationships between that of an apprentice learner and their teacher - a type of learning through slow progressions of engagement into a practice (Davies, 2005; Wegner, 2011). The fundamental concept to this learning is *legitimate peripheral participation*, where a learner can participate for a limited extent in a practice, with limited responsibility, and thus, less pressure for perfectionism (Davies, 2005). Wegner (2011) explains three crucial characteristics of what defines a community, these are:

1. The domain - a community's identity is defined by a domain of interest, and a commitment and competence of members;
2. The community - members undergo discussions, learning and sharing together, building relations between each other;
3. The practice - members develop a shared repertoire over time and as a result of sustained interaction.

A CoP is not the same as members doing the same *activity*, rather, it is an ongoing, dynamic process of negotiation and membership eligibility by its members (Eckert & Wegner, 2005). Eckert and Wegner (2005: 583) explain this coherently, stating that:

> "Practice always involves the maintenance of the community... Legitimacy in any community of practice involves not just having access to knowledge necessary for 'getting it right', but being at the table at which 'what is right' is continually negotiated".

This begins to define CoP as different to social network theory. As Davies (2005) notes, the focus of social networks are the structural links of its speakers, rather than the practice that happens within those links. In turn, the focus of CoP is the importance of doing practices in a way which constructs the identity of the community and defines the membership of such a community. CoP recognises that although an individual may have a social network with their neighbour, occasionally talking about the weather and passing greetings, this network is not a *practice* when compared to that same individual who participates in weekly band practice, preparing for a concert. Here, the weight of social networks *can* be evaluated by the practices which occur in the communities. Furthermore, individuals are a part of multiple communities (family, friend group, sports teams, workforce, etc) and must operate these memberships accordingly (Eckert & McConnell-Ginet, 1992). In turn, a speaker's identity emerges from these multiple memberships, constructed from engagements in different communities, resulting in an accumulation of shared knowledge,

expertise, and experiences (Eckert, 2000). As Eckert (2000: 40) summarises, "[CoP] focuses on the day-to-day social membership and mobility of the individual, and on the co-construction of individual and community identity".

As CoP has integrated its way into multiple domains (see Wegner, 2011 for an overview), the sociolinguistic community has also used a CoP lens to account for linguistic variation. Rather than being another category which is assigned to speakers like gender and age, it provides a different way of viewing the relationship between social practices/meanings and social categories (Eckert, 2000). Furthermore, given that speakers are in multiple communities and have dynamic identities, they develop linguistic patterns as they act in such communities to represent their identity (Eckert & McConnell-Ginet, 1992). Status hierarchy is prominent in some CoP, and 'core members' who encapsulated central values of a community are most likely viewed as models for other members who want to achieve similar status or identity (Eckert & Wegner, 2005). Investigating vowel shifts through a CoP framework summarizes how social practices can indicate such linguistic changes (Eckert, 2000; Eckert & Wegner, 2005). Eckert (2000) investigates how two opposite high school social groups - the Jocks (more suburban) and the Burnouts (more urban) - make use of vowel variants relevant to represent their identities within the school's social setting (the vowels in question being those in the Northern Cities Chain Shift (NCCS), and the (ay) diphthong). Eckert found that (e) and (/\) backing and (ay) raising was more advanced in urban areas and in urban schools where the burnouts are leading this change, highlighting that the 'urbanness' of these vowels have an urban-related social meaning which is positivity valued for burnouts but negatively valued for jocks. Alternatively, reversal of (e) and (/\) backing was more advanced in suburban areas and jocks led this change, highlighting the positive suburban-related meaning of these variants for jocks, but negative social meaning for the burnouts. Eckert makes it apparent that these variables carry social meaning relative to certain communities and their practices that allows members to linguistically represent their identity. Eckert (2000) also highlights gender differences within and between the jocks and the burnouts. Jock girls lead in the suburban changes while burnout boys and burnout girls may lead in their urban changes. In turn, boys are more conservative and vernacular in Eckert's data, hardly ever leading change, while the girls lead in their cohorts using more advanced standard variants in any suburb. This parallels findings of gender in social network theory, but CoP accounts for the use of such variables to social meaning in practice and identity, rather than a 'who talks to who and how often' method.

Interestingly, in the use of urban variables, the burnout girls were more advanced than the jock girls. Thus, it is not the case of whether this variation is 'male' or 'female' in general, rather, it is about being a male or female jock or burnout regarding their place on the urban-suburban

continuum both within and between groups. Finally, Eckert (2000: 213) writes that "ultimately [correlations between variables and social categories] point to the stylistic work of the communities of practice in which the students of Belten High participate, and in which they negotiate their relation to, and the significance of, these practices". A variable acquires meaning through the use of it in CoP (Eckert & McConnell-Ginet, 1992), and the use of standard or nonstandard variables reflects the dynamics within and between communities to represent the identities of its membership, constructed by the members themselves. Straying away from linguistics briefly, the CoP framework has also seen interest in gender-studies, such as Paetcher (2003) who writes how masculinity and femininity are CoPs. Paetcher (2003) notes that knowledge, and the power of knowledge, is bound with masculinity and femininity, and different forms of knowledge are seen as masculine or feminine. And men with 'masculine knowledge' claim privilege and power to this knowledge and deny it to their female peers.

It follows that Gloriavale has gendered and aged CoPs within Gloriavale. Men not only share the knowledge and undergo practices in their male-only workplaces, but they are also members, or becoming members, of a 'leadership' community. Like an apprentice, these men are slowly integrated into roles of leadership and responsibility in the young life stage. Gloriavale establishes a culture of male dominance, and this is part of many male's identities. Their purpose and membership in any of the male-dominate CoP is determined by their individualistic attempts at hard work, determination, and authority. This is particularly true for the young members, where many of them are starting to gain multiple responsibilities (new fathers, climbing the workplace ladder, running group activities, etc.), thus, possibly looking to the settlers/shepherds, those with the greatest responsibility (or 'core' members), for guidance and blessing. Consequently, young men may have formed CoPs with the older men due to the goals in the young life stage.

What has not been mentioned until now, is that three out of the four males settlers in the Gloriavale dataset are community shepherds, so perhaps the reversing of vowels in the second generation is partly due to the settler members themselves. Whereby, if the younger males are striving for the highest leadership roles in the community, they are creating stronger networks and CoPs with the settler members, and in turn, their vowel reversal is a means of recognising and accentuating this goal. This is assuming that all the second generation males in this dataset have this drive, which may not be the case. Perhaps then, the vowel reversal may not be as accentuated if the settler male data were of non-shephard speakers. Regardless, there is the possibility that old speaker variants carry strong social meaning, which is positively evaluated by the young speakers, hence the greater use of them compared to the middle-aged speakers. However, a different study design would need to happen in Gloriavale to rightfully account for the social meaning of variants in the

community, thus the assumption here is merely a thought. As the CoP literature highlights, individuals juggle multiple memberships in different communities which lead to the speaker's identity. So yes, the young males may be orientating their membership of authority in the community, but they are also the *single* males, the *newly-married* males, the *engineers*, the *plumbers,* the *farmers*, the *young fathers*, right down to the *baritone* males in their concert performance. Hence, the variation in all male generations is due to different identities from different CoP in each generation.

As Eckert (2000) highlights in her jock and burnout data, it is not whether one is male or female at Gloriavale, but their gendered place and age-driven CoP membership within Gloriavale. So, to maintain some individuality in a somewhat identity-hindering community (same clothing, same diets, same ideologies, same daily activities etc.), speakers are utilizing linguistic elements to represent the CoPs they belong to, or the CoP memberships they strive for. A CoP approach allows for speaker autonomy, and in Gloriavale's case, their ability to express identity is via linguistic autonomy. Furthermore, the different CoPs pertain to different social networks, with the young males more likely to network with the older males if they strive for leadership positions in the community. This discussion leads towards the notion that the male data is not an example of language change at Gloriavale, rather, age variation at Gloriavale, by which the uniqueness of the community allows for vastly different life stages compared to more open and urban communities. Therefore, the intensity of the male life stages which may contribute to the degree of variability between ages. The young male members quickly shift their 'single' identities to 'newly-wed' in a matter of weeks, and then to 'fathers' around a year later. Additionally, the men at this stage are still trying to make an impression in the community while looking at the older members in the community as role models. Note as well that the age of these members can range as young as 17-20. This morphs into the life stage of the Gloriavale's middle-aged members who need to cater for a large family while tending to their duties in the community. Again, such large families are not that common in North Canterbury, and so the transition from newly-weds to middle-aged fathers is not so extreme and rigorous there. Finally, the Gloriavale identity takes a turn for the last life stage, or the old community members, as they become the pillars and role models of the community. Furthermore, they do not stop working and have no retirement age, unlike the average New Zealander who can retire at age 65.

It is also possible that the male age variation is occurring simultaneously with koineization processes happening in the community over generations, given the community is a new settlement with multiple input dialects. Perhaps then, it is the old males which are resembling the young males, as the older speakers are shifting their vowels later in life to match the current vowel shifts in the

male community. The best way to be able to test for this is by looking at individual speaker data diachronically, which this thesis can investigate to some extent using Hopeful Christian's data, explored in Section 5.5.

5.4.2 Monotonic Sound Change in Women at Gloriavale

Unlike the men, the women at Gloriavale show a great monotonic trajectory of their vowels over three generations. Interpreting the findings as change over time, there are indications that isolation and identity factors are contributing to the monotonic vowel change for the women.

As a reminder to the reader, isolation is bound with Gloriavale's identity as being separate not only allows them to practice their religious belief in a physically separate geographical space, but it enhances their distinctness from New Zealand, or the 'outside'. Most members disassociate themselves from the outside due to their Christian teachings that the outside world is evil. This is clear in the documentaries, evident by the quotes from Gloriavale members in Section 2.5. Therefore, the degree of monotonic vowel change in women over time may be due to a heightened isolation status (particularly after their move to Lake Haupiri) which would lead to a greater 'Gloriavale identity' and possibly more negative teachings of the outside world. In other words, as Gloriavale becomes more distinct in their identity, the females are actively diverging their speech away from the typical NZE dialect. Additionally, increased media attention over time may be contributing to the need for member distinction. And as was mentioned in the discussion on the male variability, perhaps gender segregation has intensified over time adding to linguistic gender differentiation, with the women continuing a monotonic trajectory different from the men.

Furthermore, koineization processes may have also influenced the direction and rate of monotonic change for the women. As was discussed in Section 5.3, the women show little, if any, survival of Australian variants over time. Based on NDF and New Town koine literature, perhaps the Australian variants may have been the regionally-marked or the minority feature among the women during settlement. Furthermore, perhaps the lack of Australian variant survival could be due to the association of Australian variants with leadership, particularly towards Hopeful Christian who immigrated from Australia. However, this claim cannot be justified without a different study design.

Accounting for the results in Gloriavale women as life stage variation is not as easily interpretable as it is for the men. Although there is a strong likelihood of multiple CoPs within the women community at Gloriavale at different ages, the identity and social networks of women do not vary as significantly per life stage due to their submissive position in the community. Unlike the

men, the women do not strive for leadership positions in the community nor do they initiate shifts between life stages, such as asking to be married. And so one might assume that the less intense shifts between life stages would result in linguistic variability at a lesser degree/extent of the men. This is not the case, however, as the degree of monotonic change in women is not any less to that of the reversing trajectory of men. Therefore, the variation in the women's data is better accounted for as sound change influenced by isolation and identity factors.

5.5 Finding (4): Hopeful Christian's Vowels

The mapping of Hopeful Christian's vowels at three different community stages may uncover the reality of the vowel variation at Gloriavale. *Figure 16* highlighted that the vowel shifts for Hopeful imitate the shifts of the Gloriavale men across the three generations, whereby Hopeful is reversing the same vowels by 2016 (the most recent speech data) to match similar acoustic spaces to that in 1986 (the earliest speech data). Before discussing the implications of these findings, it is important to recognise the fact that Hopeful's vowels are shifting throughout his adulthood. This opposes the linguistic notion that speaker dialects are mostly settled and stagnate in their adulthood and supports the theory by Nycz (2013) where adult speakers can undergo 'second dialect acquisition'. Given Hopeful is the community founder, he would have interacted most with other Gloriavale's settlers, some of whom migrated from English-speaking countries (Gloriavale Christian Community, 2020). In turn, it is possible that Hopeful's vowel space from the 1986 data has already accommodated to the variety of input dialects. Furthermore, it should be noted that Hopeful spent 11 months in prison in the mid-1990s - around the same time the community finished moving to the West Coast (Bayer, 2019). Because of prisoner interaction, Hopeful may have further accommodated his speech during this time and introduced variants into the community when he was released. In turn, this questions the use of the apparent time construct for all the Gloriavale data, particularly if the settler speakers are undergoing vowel changes over their lifespan.

Returning to the likeness between Hopeful Christian and the male speakers, there are two possible interpretations depending on what the male generation represents. The first interpretation accounts for Hopeful's life changes described above. Wherein, as Hopeful's vowels have shifted, the other men try their best to copy him due to his position in the community. This may be particularly clearer in the young men, given their CoPs and social network identities. The second interpretation is that Hopeful is not causing change, rather all the men are shifting their vowels as defined by their life stage. The variation may have been accelerated in Hopeful's case because of

his social networks outside the community and his position within the community. Given the community was founded by Hopeful in his adulthood, perhaps he shifts his vowels in accordance to community instability. If koineization occurred in Gloriavale, which the women's data suggests, then Hopeful is a perfect example of life stage variation as both him and the community are unstable (Meyerhoff, 2011; Wagner, 2012). In turn, Hopeful may be undergoing individual sound change while the Gloriavale community is undergoing diachronic change. And perhaps with his life stage variation, this has become the standard age-graded variation for all men when the community shows stability.

5.6 Determining a Unified Account for Gloriavale

The findings of this thesis highlight that there are two types of language variation and change occurring in Gloriavale depending on gender. The men are exhibiting life stage variation due to different constructions of identities at different ages, which results in different CoPs. The young men are more likely to network with the older men to secure their place in the community and to demonstrate their responsibility and leadership capabilities. In turn, the young men and settler men display more similar vowel realisations than the middle-aged men. This may be why Australian variants have survived in men, as the highest leader of them all, Hopeful Christian, was an Australian. In turn, what may look like vowel reversal over time is actually vowel reversal within a speaker's life span. This explores how adult speakers can vary past the critical period, and this variation is more pronounced when each life stage is greatly different. On the other hand, the women are exhibiting regular sound change over time as a CoP/life stage approach does not adequately explain their rate of monotonic vowel shifts. This monotonic shift is due to effortful divergence away from speech styles of NZE, enhanced by greater isolation status over time which adds to a Gloriavale identity that contrasts to the 'outside world'. Furthermore, in order to highlight the gender segregation in the community, the women continue to monotonically shift their vowels, diverging their speech from the men. Increased media attention for both genders may increase the saliency of their identities and the gender segregation in the community, hence the different patterns between men and women. Both genders exemplify how in a community which pre-determines many identity markers (e.g., hairstyles, clothes, workforce), speakers utilize their linguistic autonomy to create identities within the community.

Isolation ties into the identity constructions within the community which explains why Gloriavale depicts greater degrees of variation/higher rates of change compared to an open community like North Canterbury. The isolation findings for Gloriavale nuances the isolation

literature, as previous literature highlights how isolated communities with denser social networks exhibit language change at a slower rate than non-isolation, weak-tied communities. This is not the case for Gloriavale, rather, isolation increases the degree of variation and change because it secures the Gloriavale identity, allowing speakers to show linguistic variation.

5.7 Research Questions Answered

Because this thesis created its research questions under the assumption that an apparent time construct would show language change, these questions cannot be answered given the life stage variation in men. Therefore, the questions shall be restated in a more neutral fashion, allowing both the language change and life stage variation findings to answer them. The modified research questions are as follows:

1) *How does vowel variation across generations compare to those in a more open community?*
2) *(How) does gender differences in the community influence vowel variation in Gloriavale?*
3) *Are koineization processes occurring in Gloriavale?*

Revised Question 1 highlights that vowel variation across generations in the community shifts at a greater degree compared to a more open community. The greater differences in life stages for the men results in greater vowel shifts over a male speaker's lifespan, whereby they may undergo vowel reversing to fit their identities and CoP at different ages. All men exhibit this change which supports the life stage account. This occurs in Gloriavale due to the uniqueness of the community's social structure which bases its livelihood on their interpretation of the Bible, wherein male dominance is a pillar of their Biblical principles/interpretation. Hence, greater degree of variation in the Gloriavale male speaker's compared to the North Canterbury male speakers. The women exhibit greater rates of change over time compared to a more open community, due to the saliency of their Gloriavale identity as a product of their heightened isolation status. The apparent time construct is therefore valid in the women's data, and shows that female monotonic sound change is happening faster than in North Canterbury. This leads to revised Question 2, and the data suggests that gender segregation may be influencing vowel variation. *If* speakers are using linguistic means to add to the gender segregation at Gloriavale, this may explain why women are undergoing a monotonic shift over time, while the men show vowel reversals during their lifespan.

Revised Question 3 explores the notion that koineization may be occurring in the community, however, only the female data can examine this, as the male data is not showing change over time. NDF and koine literature typically find that the majority variant survives koineization, however, this is equally pre-determined by social factors (Kerswill & Williams, 2000, Schneider, 2003; Solheim, 2009). The women show no surviving Australian variants by the second generation, which is unexpected given that Australia speakers, alongside New Zealand speakers, make up the majority of the community's settlers. Perhaps then, the Australian variants were the regionally-marked feature, or the minority variant in the women's social network, hence they did not survive over time. However, this data is too minimal to answer this question substantially and future research would need to investigate Gloriavale at a deeper level to see these processes occur.

The thesis opens a multitude of potential future research questions, especially regarding the apparent time construct versus the life stages variability. How would one be able to truly investigate language change over time at Gloriavale given their unique social setting? Would the variability in life stages at Gloriavale still be present in another 50 years or so if the community still adheres to their current philosophies and principles? These questions will be addressed in Section 5.9

5.8 Thesis Limitations

Although the findings of this thesis provide new insight into the Gloriavale community and implications on language variation, there are some assumptions and limitations that need to be addressed. The two main constraints on this thesis are the assumptions about the Gloriavale community and the limited data available for Gloriavale.

5.8.1 Assumptions about the Gloriavale Community

Due to the nature of the community, and the limitations of this research, some assumptions had to be made about the livelihood of the community. For example, defining how community members view their isolation status was extrapolated from the media and ex-members, which are not as reliable a source as someone currently within the community. However, even if one asked current community members about their self-isolated beliefs (or any other related questions), perhaps their answers would better represent the beliefs/principles of the community, rather than their own. Similarly, the extent of their gender segregation is defined by what the media presents. Although the media may spotlight, or exaggerate, certain 'shock-factor' elements for their audience (Barker, 2015), the observational nature/genre of these Gloriavale documentaries highlights the

very high possibility that what the documentary portrays is as close to the community's livelihood as a non-member would see if they were physically in the community. More so, the documentaries provide an understanding of the community's religious ideologies, which is what characterises their other defining principles, such as their gender segregation and isolation status. This thesis has effortfully recognised the implications that researcher bias may have and has tried its best to provide an objective position of the community and the findings.

5.8.2 Limited Data

Because this research could not physically go into the community and record its own data, documentaries and news reports were the only data available which was limiting in it's own right. As was noted in Chapter 3 'Methodology', and detailed in Table 3, the amount of data available for the settler generation was small, and even more limited for the first generation of speakers. It was the limited data of the first generation which drove the eight speaker per generation requirement, as only eight speakers were available in the first generation that had a talk time of over 30 seconds.

5.9 Future Research

Future Gloriavale research may continue to investigate the life stage paradigm, or better attempt an apparent time construct for language change. The life stage paradigm would greatly benefit from a longitudinal, real-time study of Gloriavale members and map language variation with life stages. This could further be supplemented with ethnographic studies on identities and social networks, particularly given Gloriavale's dense and multiplex network structure. In addition, it would be interesting to see how the young males vary in vowel realisations depending on the leading older males in the community.

Alternatively, a more NDF/koineization focus can use Gloriavale data to better investigate change over time given different input dialects in a religious and isolated setting. Perhaps to avoid the influence of life stages, this research would need to exclude social factors such as gender. Additionally, it could investigate the role of more salient Australian variants in a Gloriavale dialect such as the PRICE diphthong. Although Kendall (2017) did some diphthong investigation of MOUTH in Gloriavale, perhaps investigating more NZE or AusE diphthongs with a greater number of tokens would provide a clearer picture of language change in Gloriavale.

If an apparent time construct approach happens to also realise variant reversal, one could take a more theoretical approach and investigate how vowel reversal competes with Bybee's (2001) claim that sound change reversals cannot occur (see Cox & Palethorpe, 2008).

Chapter 6

6. Conclusion

This thesis intended to investigate how vowels have shifted over time in parallel to Gloriavale's rising isolation status and identity projections. Furthermore this thesis wanted to investigate how these shifts compare to a more open community. What this research discovered in the process was the significant implications that identity constructions have on linguistic variation, especially in the form of gender expression and segregation, and isolation as a type of identity. Using data available online and from existing corpora, this thesis undertook sociophonetic analysis on monophthongal variation over three generations in Gloriavale and North Canterbury. Furthermore, this thesis deployed three data modelling rounds to capture the most significant changes in the corpora, with the predictors of *corpus, age*, and *gender*. The findings showed that Gloriavale is exhibiting more variation over time than North Canterbury, which previous isolation literature would not expect. To ensure the greater degree of variation was not an artefact of the data itself, this thesis examined whether Australian English was the cause of the variation. The data modelling procedure suggested otherwise, supporting that the findings are due to something inherent to Gloriavale. When investigating Gloriavale in depth, great gender variation was apparent with women showing progressive, monotonic vowel shifts while the men showed vowel reversal. It was explored how the vowel reversal variation in men is due to age-graded or life stage variation rather than change over time. This is accounted for by their ranging life stages and CoP's/social networks modelled after their beliefs of the ideal Christian male and need for male leadership. The monotonic vowel change in women, rather, is accounted for by language change over time rather than a life stage account. The rate of monotonic change is influenced by the isolated status of speakers, feeding into the Gloriavale identity and the need to disassociate themselves from the outside world.

The findings of this thesis expand our knowledge regarding language variation in contact-situations, particularly in a community with a social structure quite different to modern society. The role of identity construction should not be undermined in variation, as these aggregates multiple aspects of an individual and may underpin many of the conscious and unconscious changes speakers undergo. Furthermore, this thesis has emphasized some of the linguistic capabilities of isolated communities, highlighting just how essential these communities are in our understanding of language change. Lastly, this thesis explored the influence of gender segregation

on gender variation. This thesis opens future research to investigate gender segregation and reintegration in gender-conforming communities.

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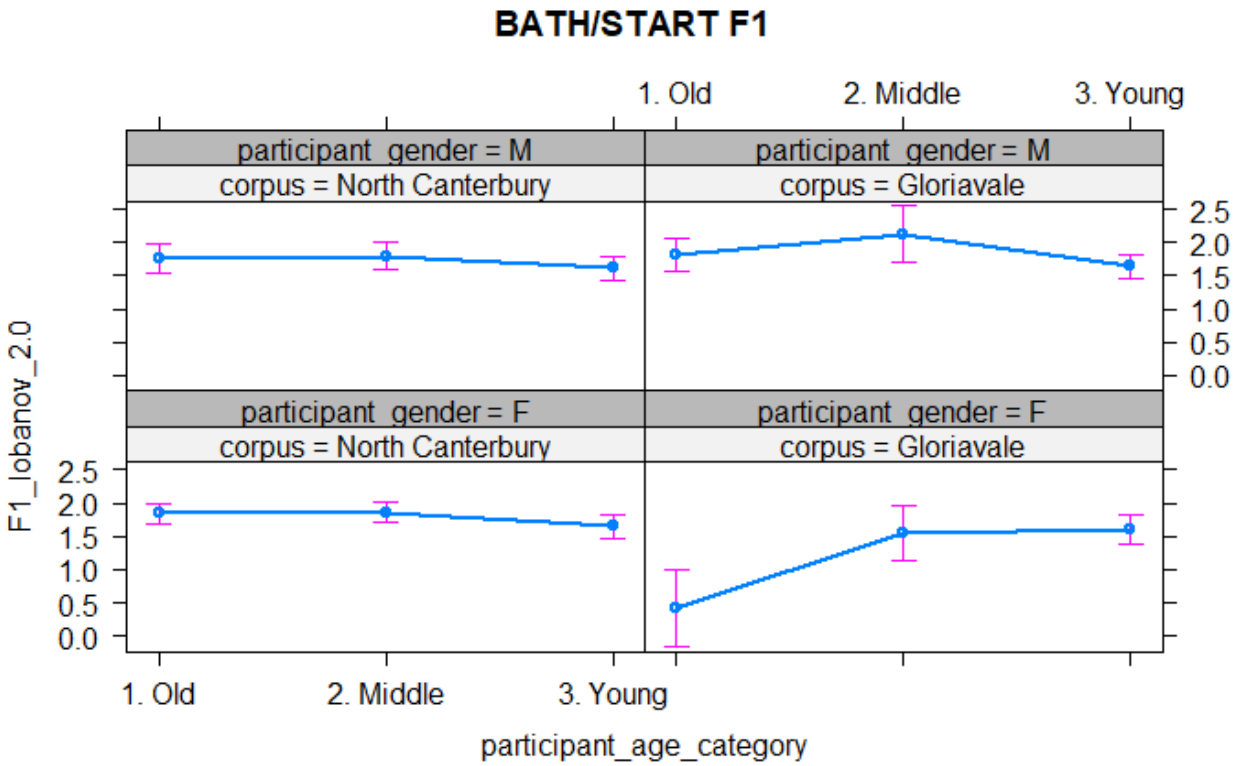
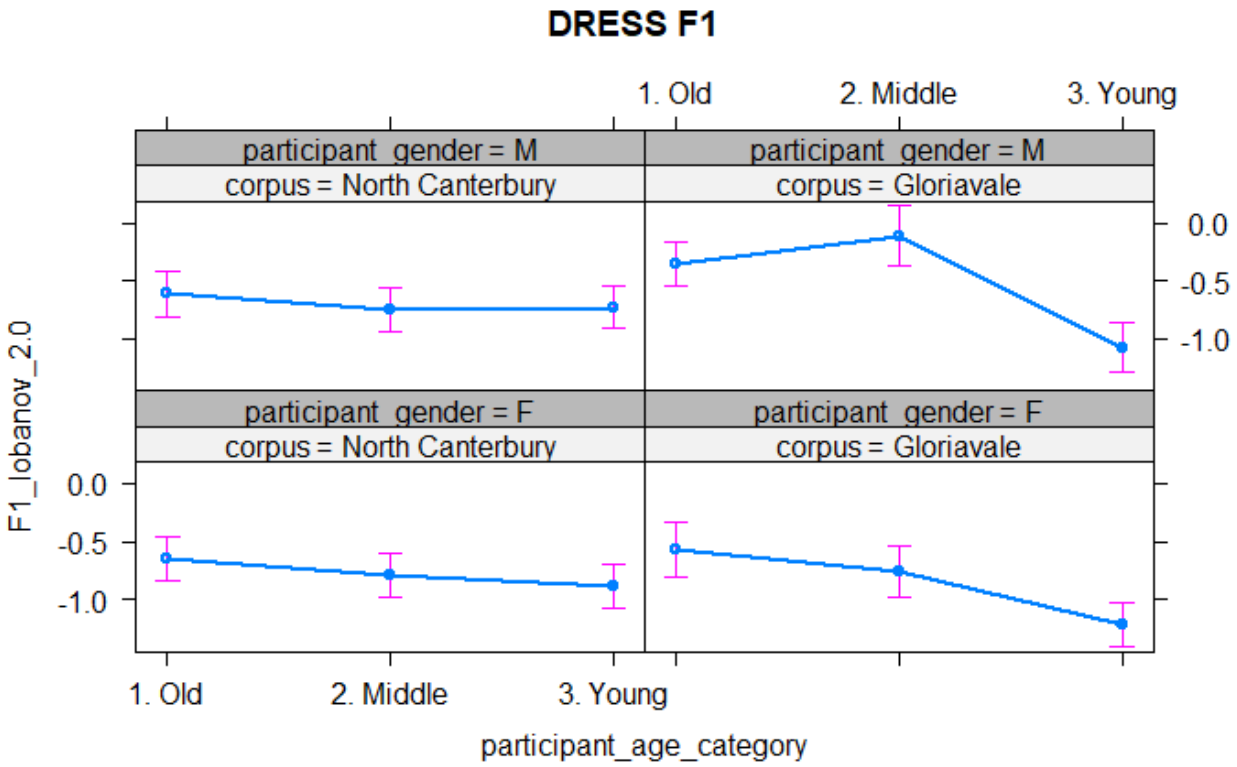
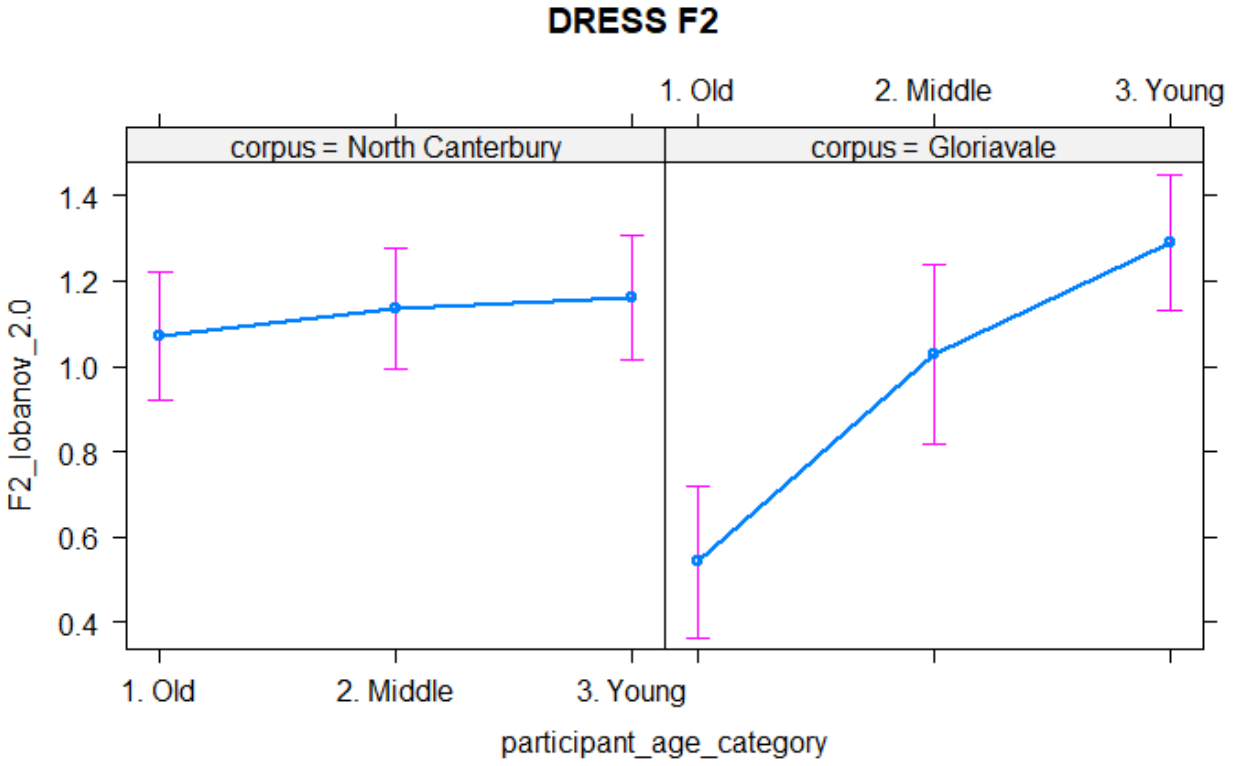
Appendix 1: Data Modelling of Gloriavale and North Canterbury

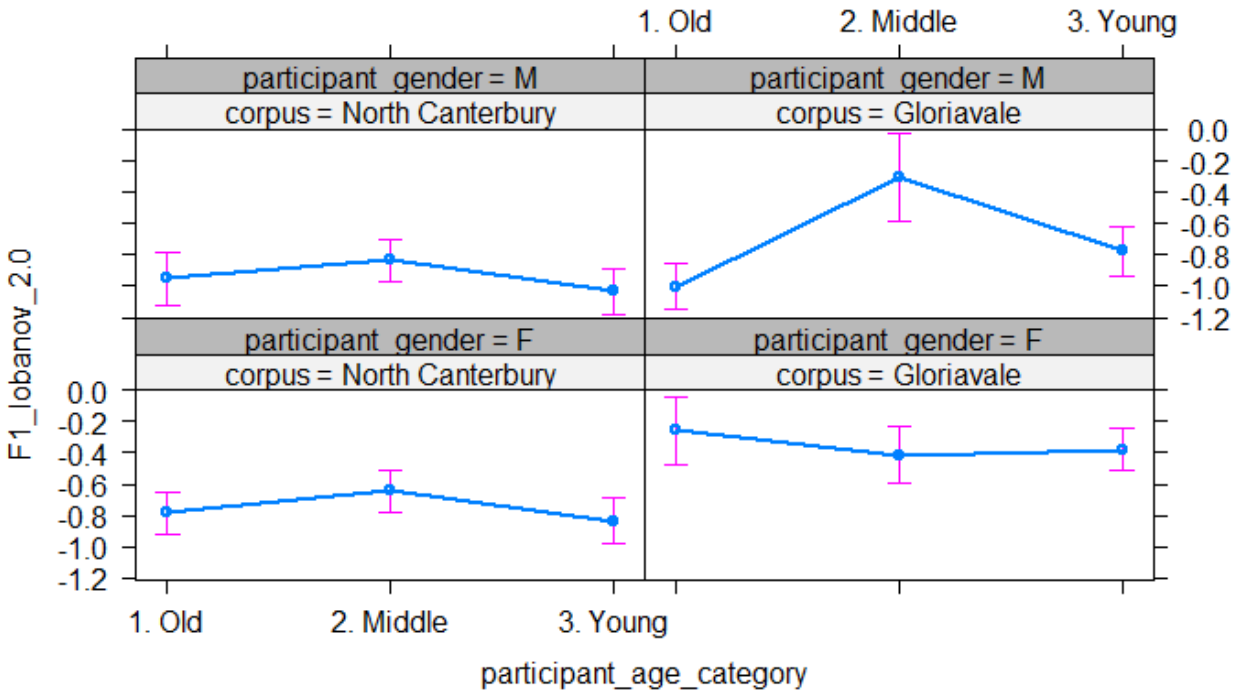
The figures below represent outcomes of the first data modelling process, listed alphabetically by lexical set. The X axis may represent age, gender, or corpus depending on the model, while the Y axis depicts the predicted Fl/F2. The models for BATH/START F1, DRESS F1, FLEECE F1, GOOSE F1, and KIT F1 all returned statistical significance of a three-way interaction between *age, gender*, and *corpus* predictors. DRESS F2, KIT F1, and TRAP F1 returned statistical significance of a two-way interaction between *age* and *corpus* predictors. NURSE F2 and TRAP F2 returned statistical significance of a two-way interaction between *gender* and *corpus* predictors. STRUT F2 returned statistical significance of a two-way interaction between *gender* and *age* predictor. FLEECE F1 returned statistical significance of the *corpus* predictor. BATH/START F2, GOOSE F2, NURSE F1, and STRUT F1 did not return statistical significance for any interaction or single predictor.



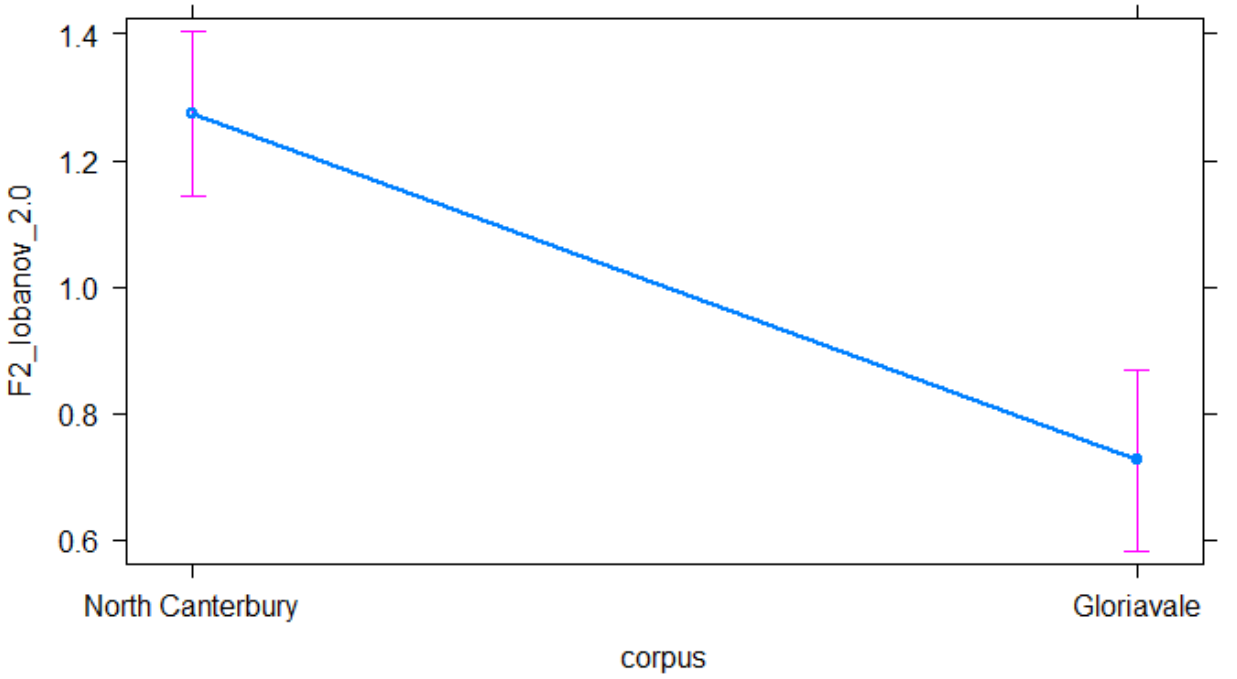

DRESS F1
1. Old
2. Middle
3. Young
participant_gender = M
corpus = North Canterbury
participant_gender = M
corpus = Gloriavale
participant_gender = F
corpus = North Canterbury
participant_gender = F
corpus = Gloriavale
F1_lobanov_2.0
0.0
-0.5
-1.0
1. Old
2. Middle
3. Young
participant_age_category

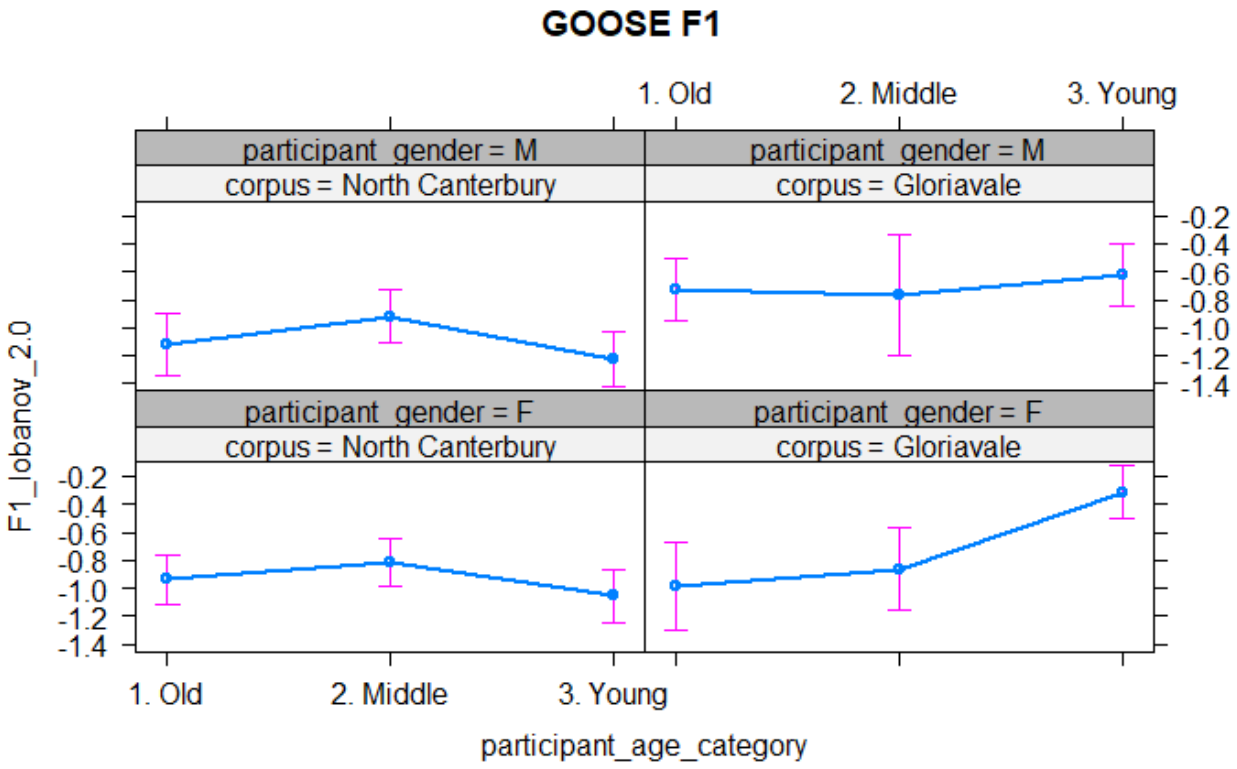

DRESS F2
1. Old
2. Middle
3. Young
corpus = North Canterbury
corpus = Gloriavale
F2_lobanov_2.0
1.4
1.2
1.0
0.8
0.6
0.4
1. Old
2. Middle
3. Young
participant_age_category

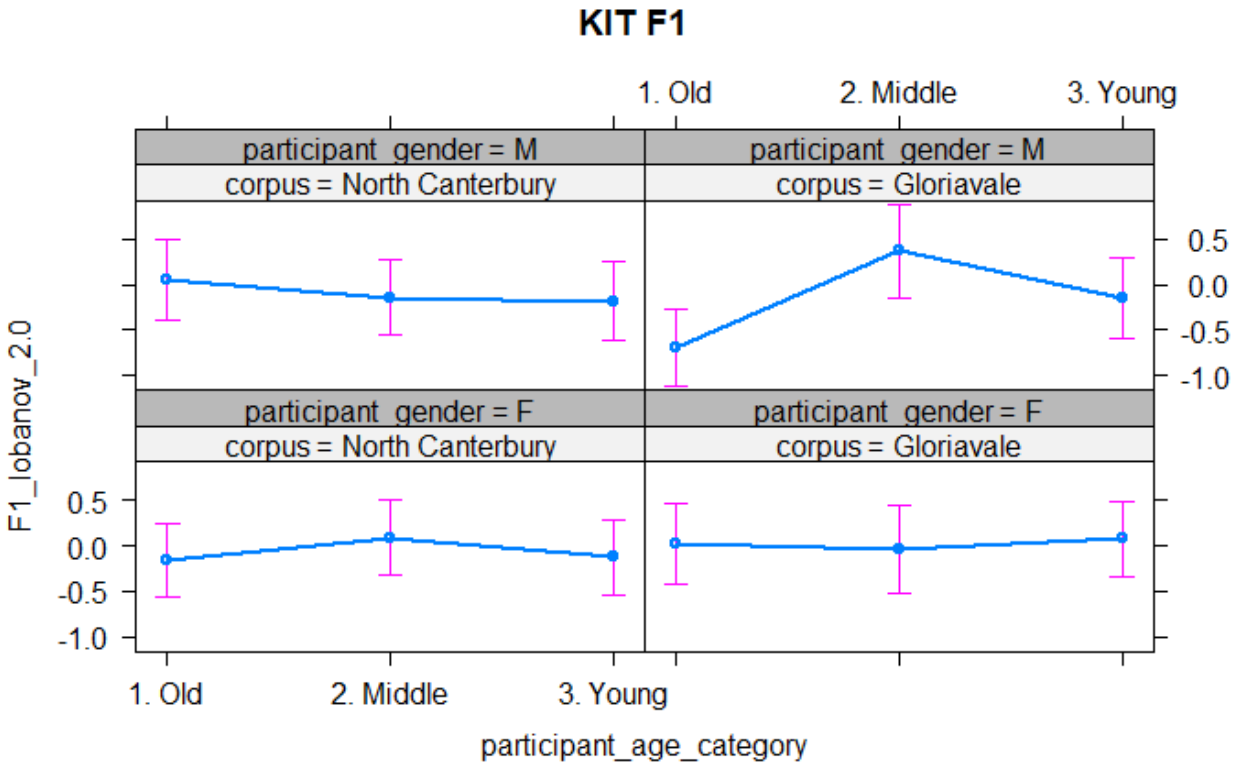
FLEECE F1

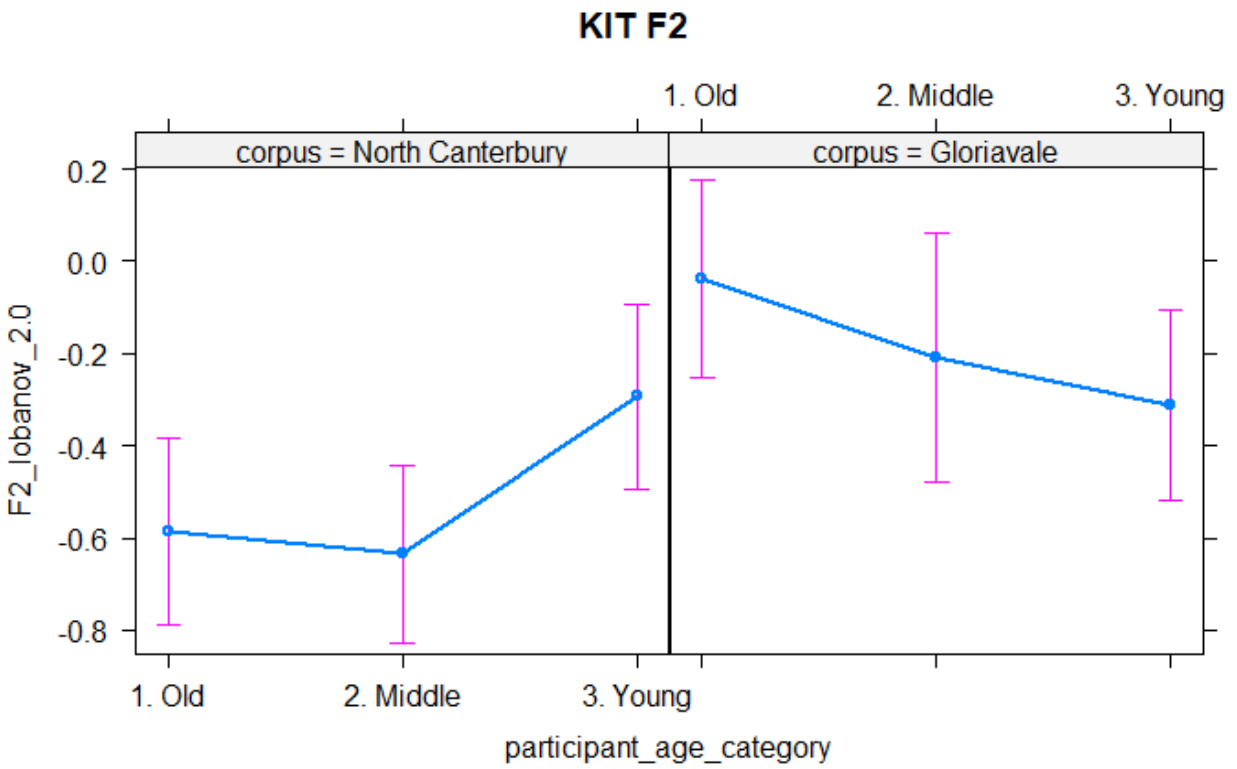


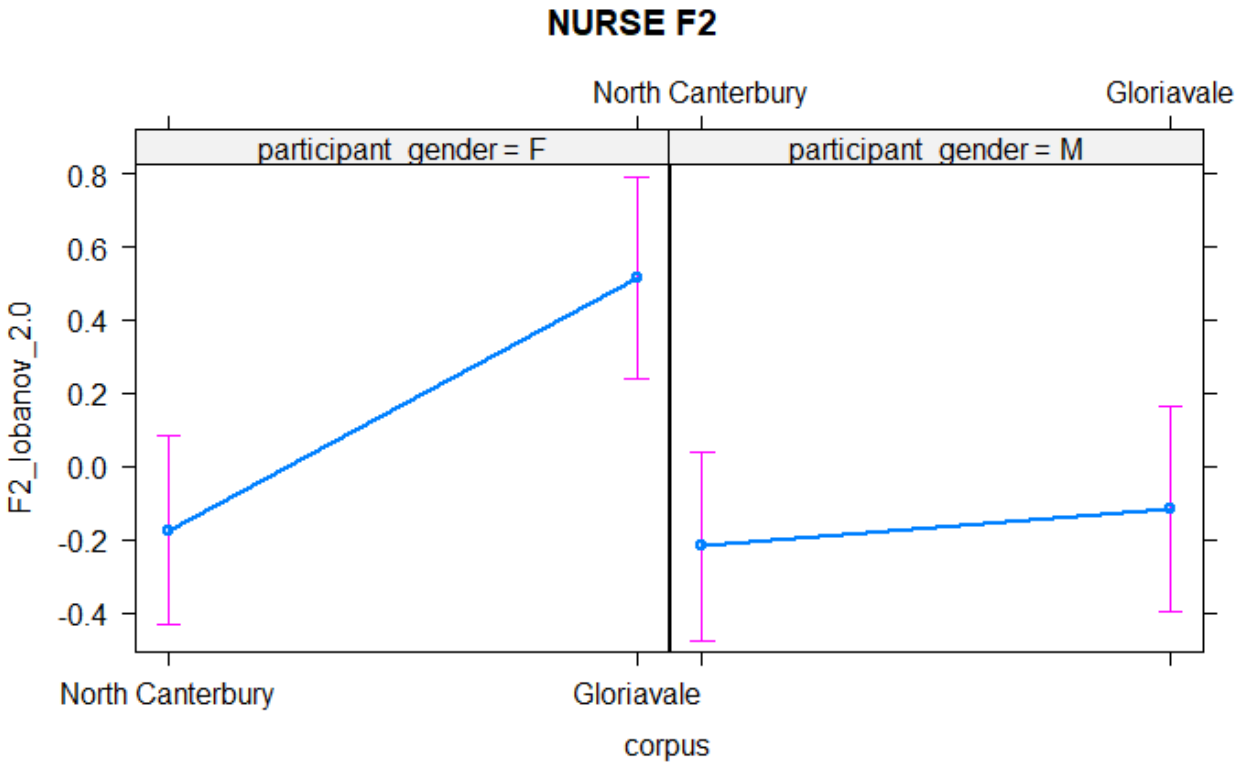
FLEECE F2

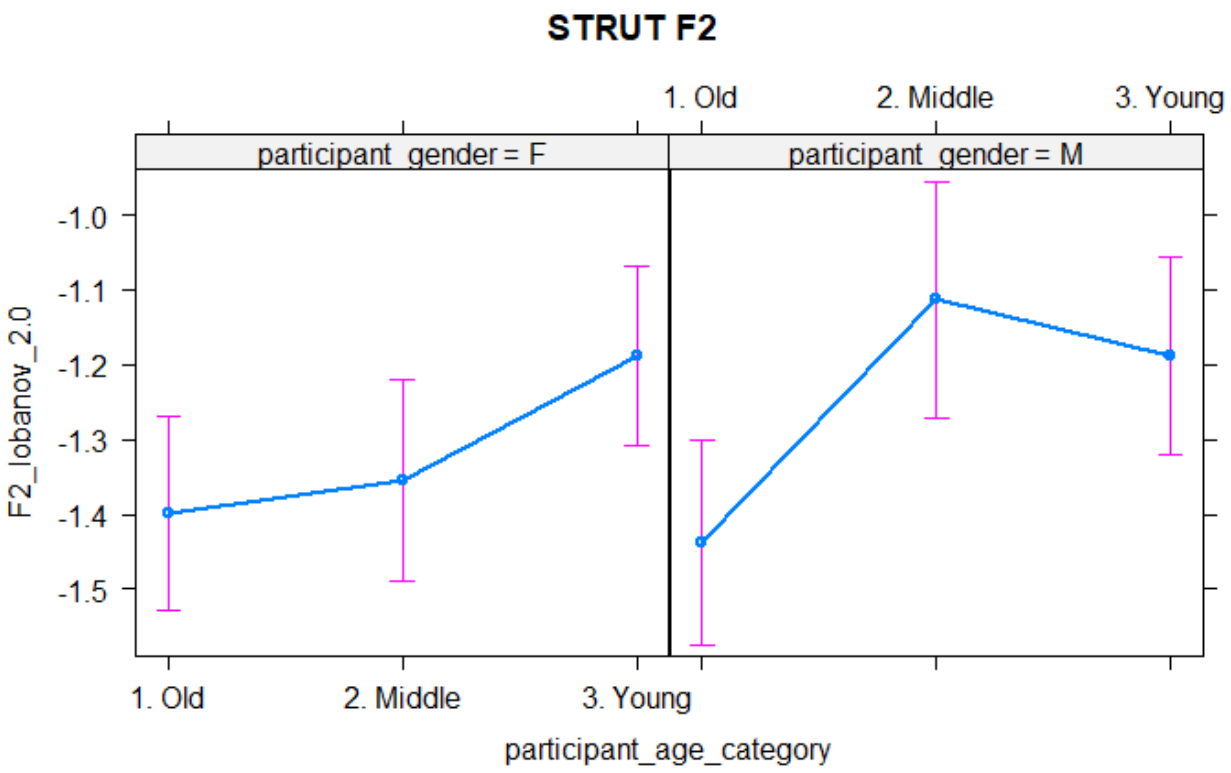


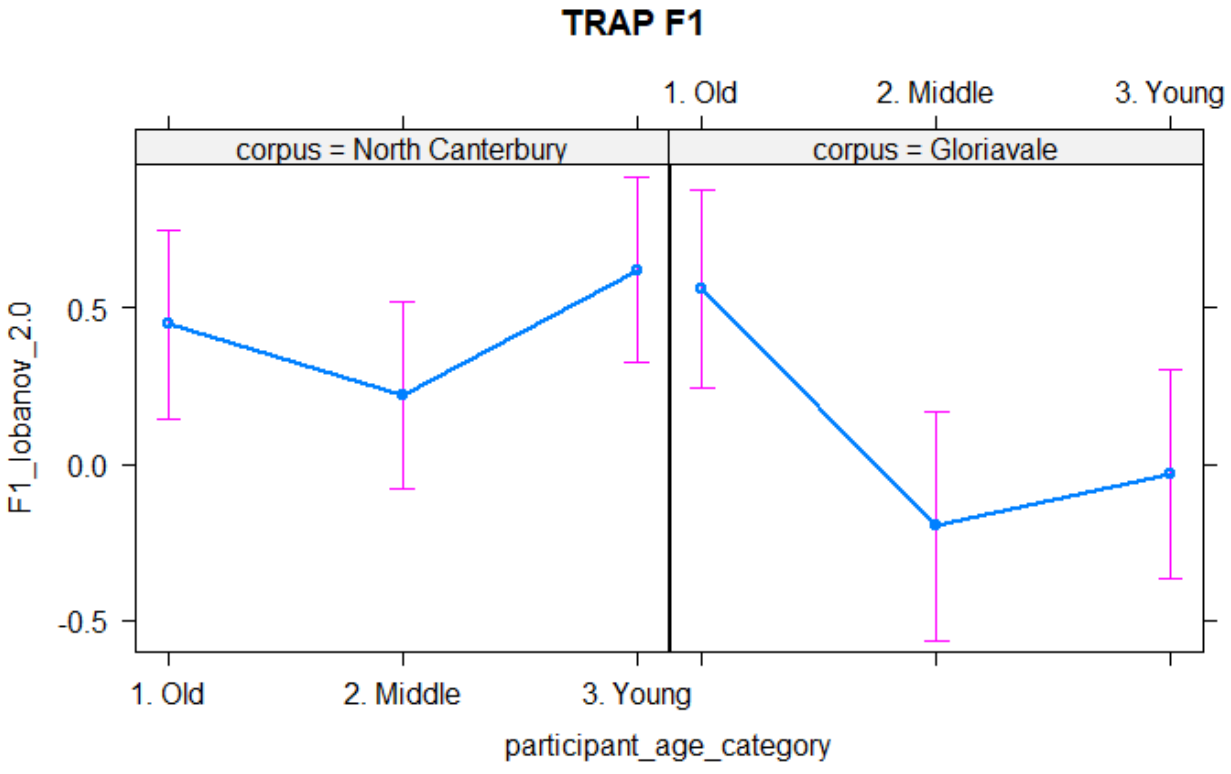

GOOSE F1
1. Old
2. Middle
3. Young
participant_gender = M
corpus = North Canterbury
participant_gender = M
corpus = Gloriavale
participant_gender = F
corpus = North Canterbury
participant_gender = F
corpus = Gloriavale
F1_lobanov_2.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-1.4
1. Old
2. Middle
3. Young
participant_age_category

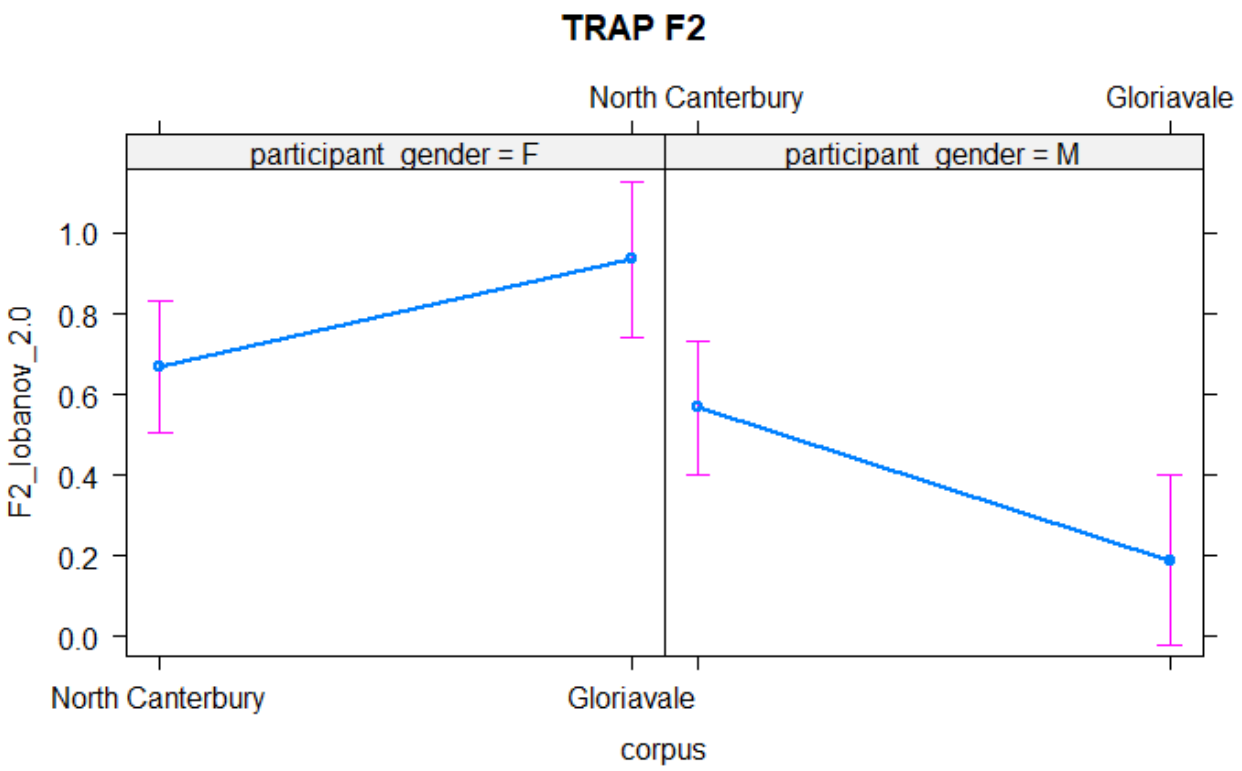

KIT F1
1. Old
2. Middle
3. Young
participant_gender = M
corpus = North Canterbury
participant_gender = M
corpus = Gloriavale
participant_gender = F
corpus = North Canterbury
participant_gender = F
corpus = Gloriavale
F1_lobanov_2.0
0.5
0.0
-0.5
-1.0
1. Old
2. Middle
3. Young
participant_age_category


KIT F2
1. Old
2. Middle
3. Young
corpus = North Canterbury
corpus = Gloriavale
0.2
0.0
-0.2
-0.4
-0.6
-0.8
F2_lobanov_2.0
1. Old
2. Middle
3. Young
participant_age_category


NURSE F2
North Canterbury
Gloriavale
participant_gender = F
participant_gender = M
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
F2_lobanov_2.0
North Canterbury
Gloriavale
corpus

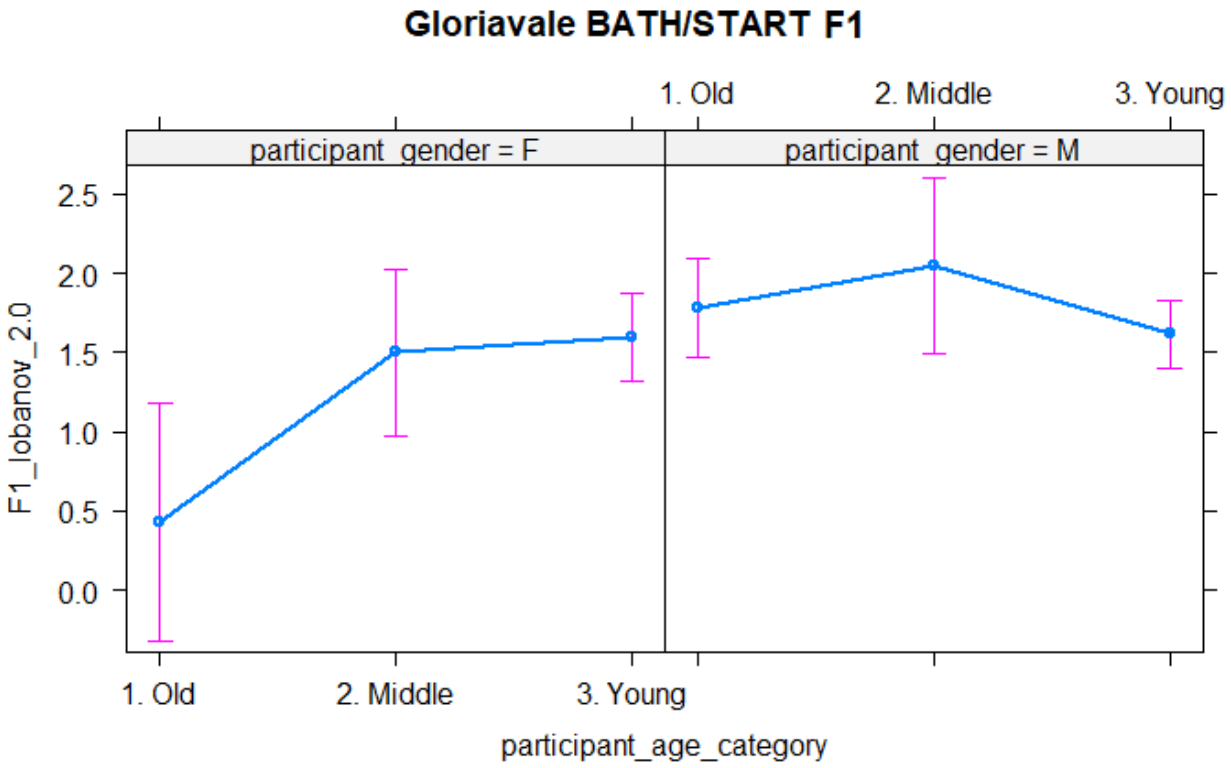

STRUT F2
1. Old
2. Middle
3. Young
participant_gender = F
participant_gender = M
-1.0
-1.1
-1.2
-1.3
-1.4
-1.5
F2_lobanov_2.0
1. Old
2. Middle
3. Young
participant_age_category

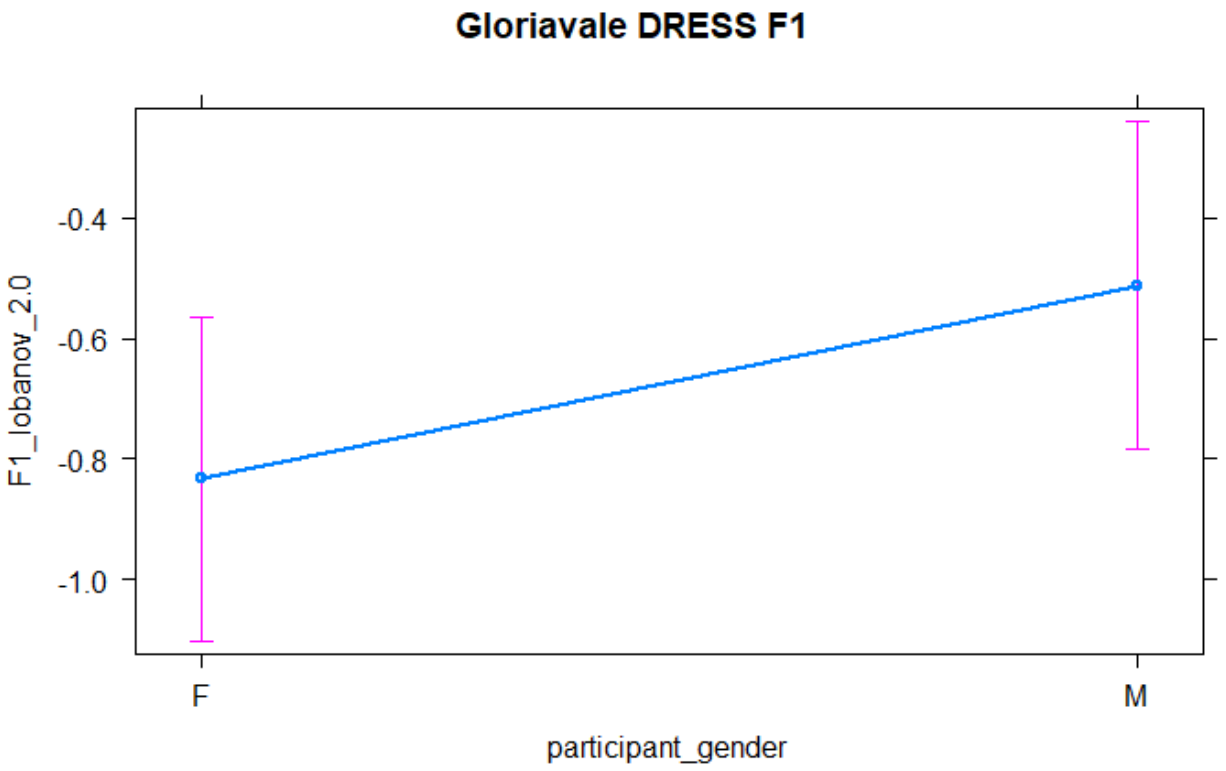

TRAP F1
1. Old
2. Middle
3. Young
corpus = North Canterbury
corpus = Gloriavale
0.5
0.0
-0.5
F1_lobanov_2.0
1. Old
2. Middle
3. Young
participant_age_category

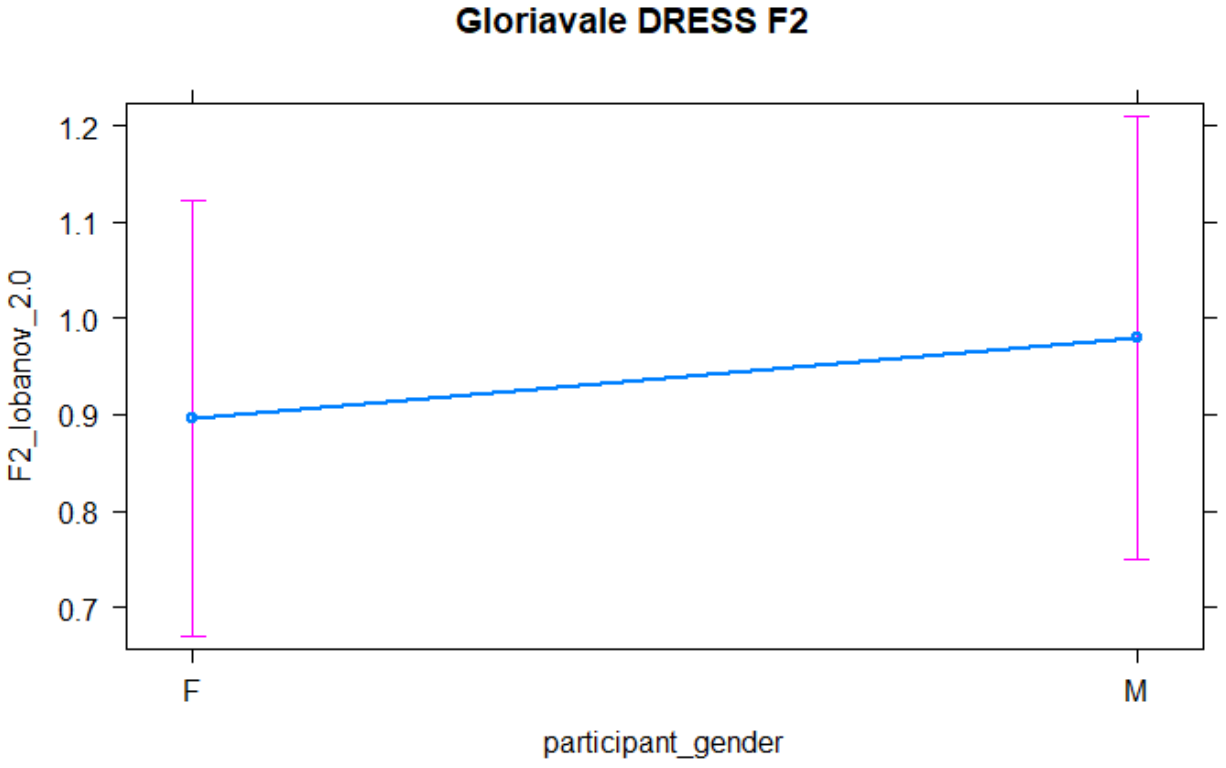

TRAP F2
North Canterbury
Gloriavale
participant_gender = F
participant_gender = M
F2_lobanov_2.0
1.0
0.8
0.6
0.4
0.2
0.0
North Canterbury
Gloriavale
corpus

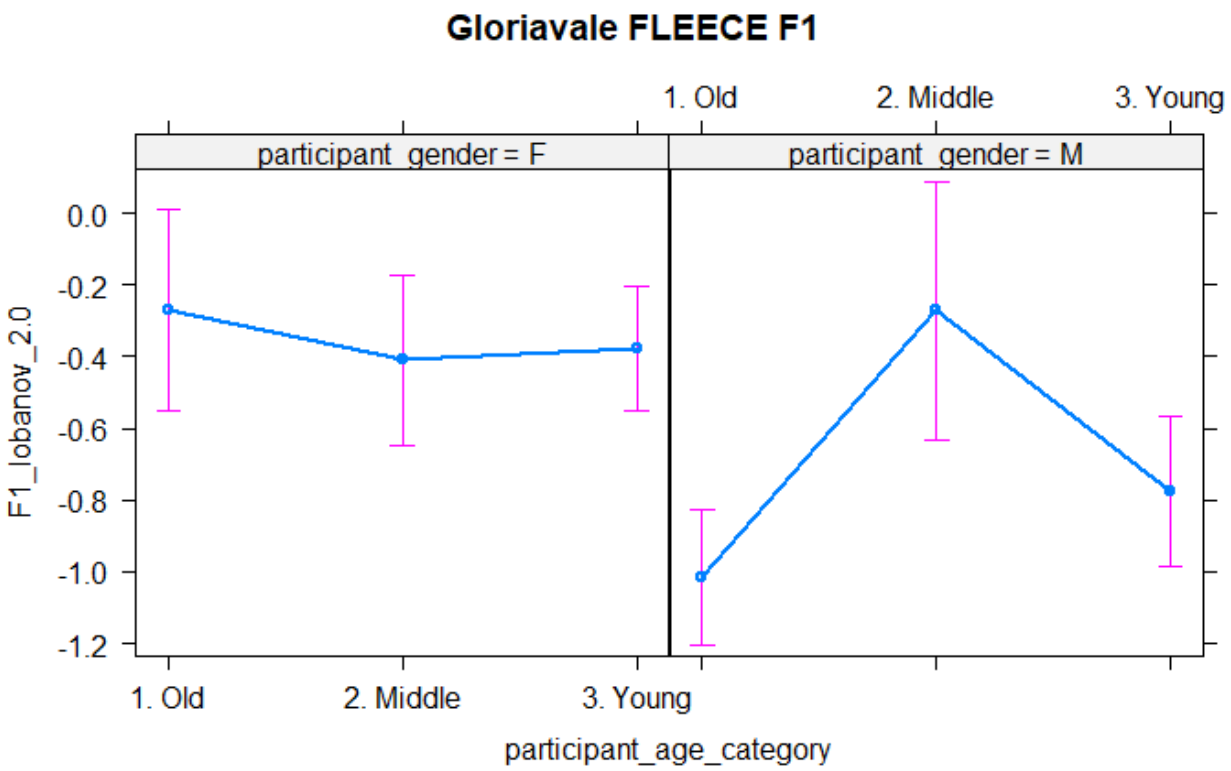
Appendix 2: Data Modelling within Gloriavale (I)

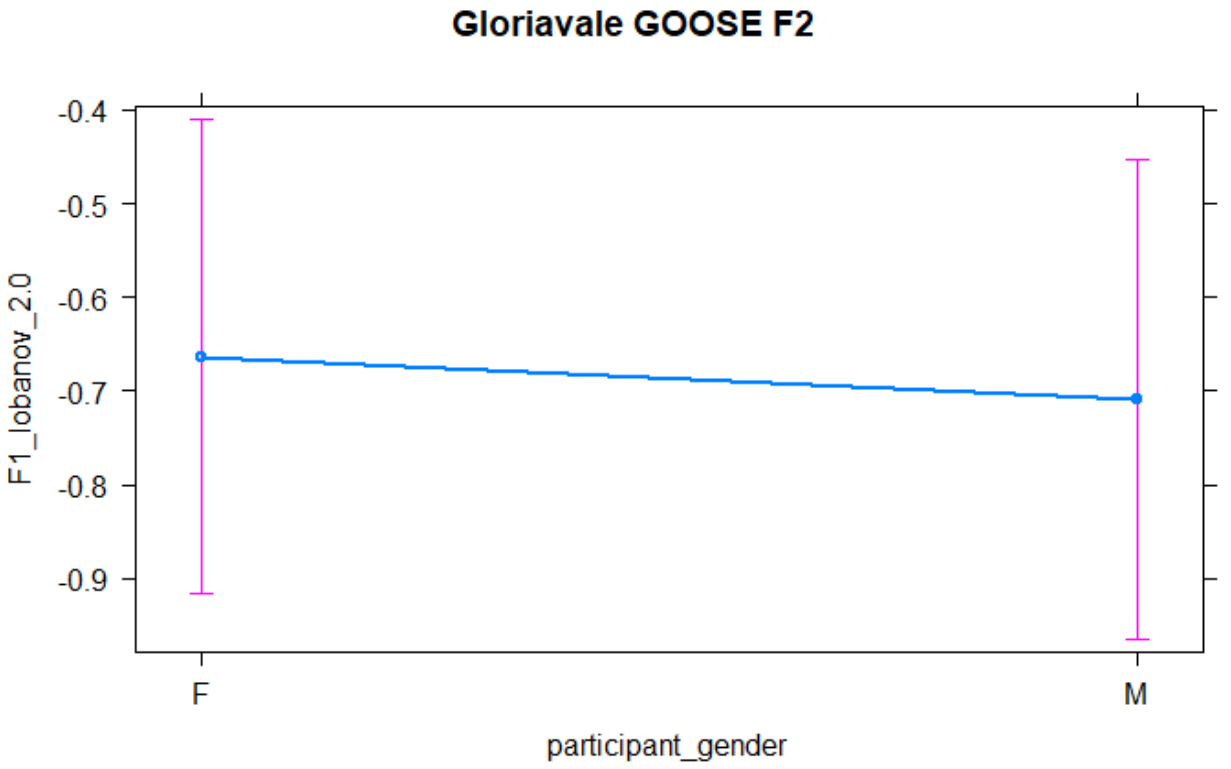
The figures below represent outcomes of the first data modelling process, listed alphabetically by lexical set. The X axis may represent age or gender depending on the model, while the Y axis depicts the predicted Fl/F2. The models for BATH/START F1, FLEECE F1, GOOSE F1, TRAP F1, and TRAP F2 returned statistical significance of a two-way interaction between *age* and *gender* predictors. DRESS F1 and DRESS F2 returned statistical significance of the *gender* predictor. NURSE F2 returned statistical significance of the *age* predictor.

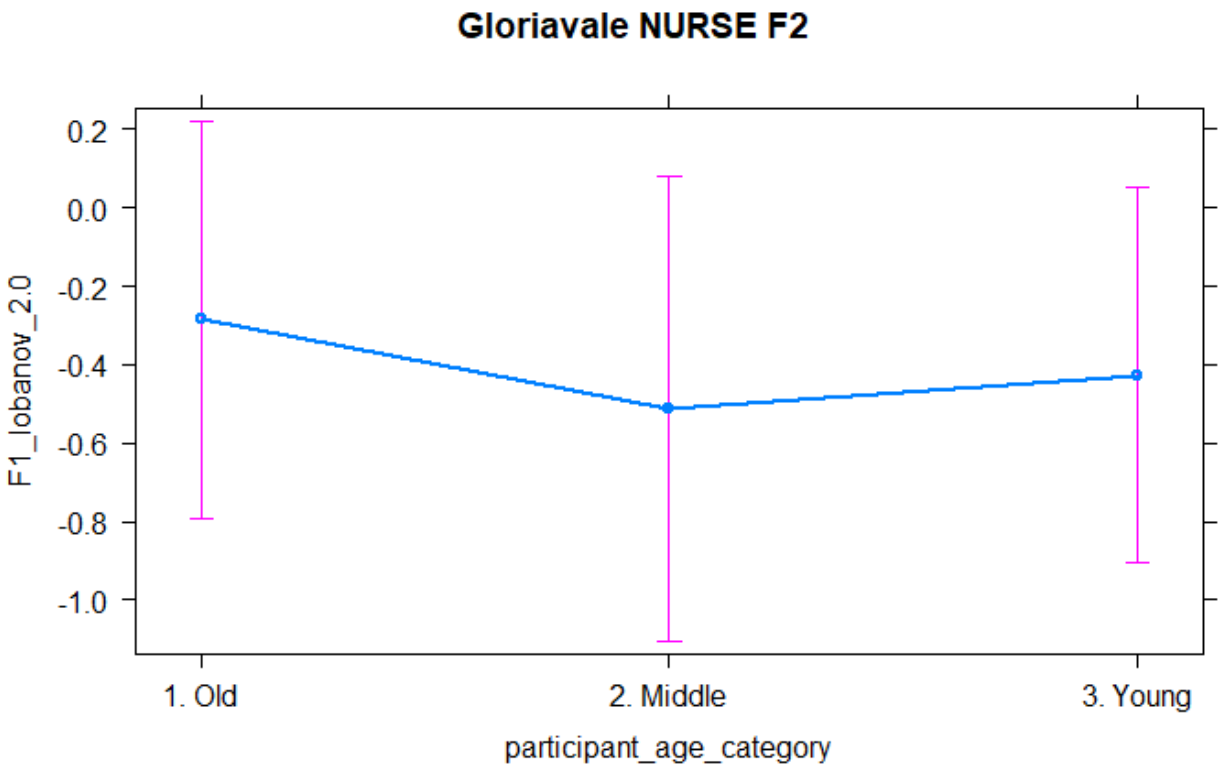


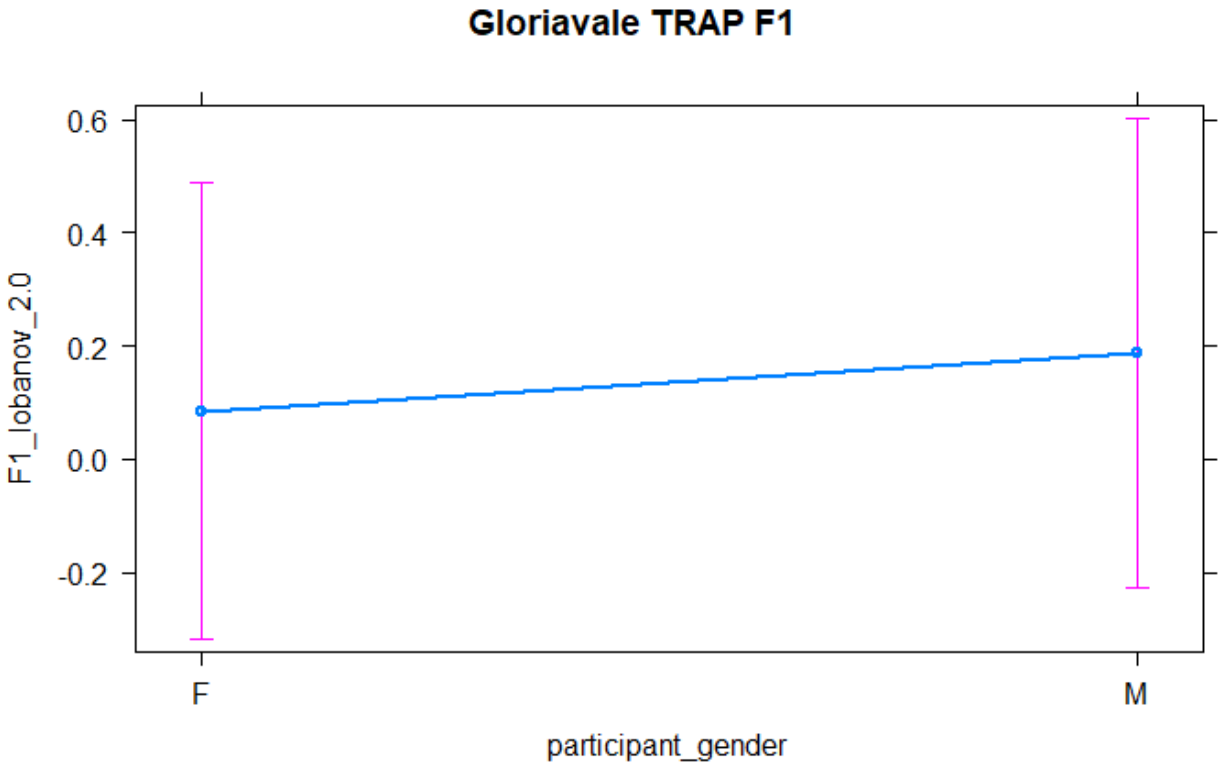

Gloriavale DRESS F1
F1_lobanov_2.0
-0.4
-0.6
-0.8
-1.0
F
M
participant_gender

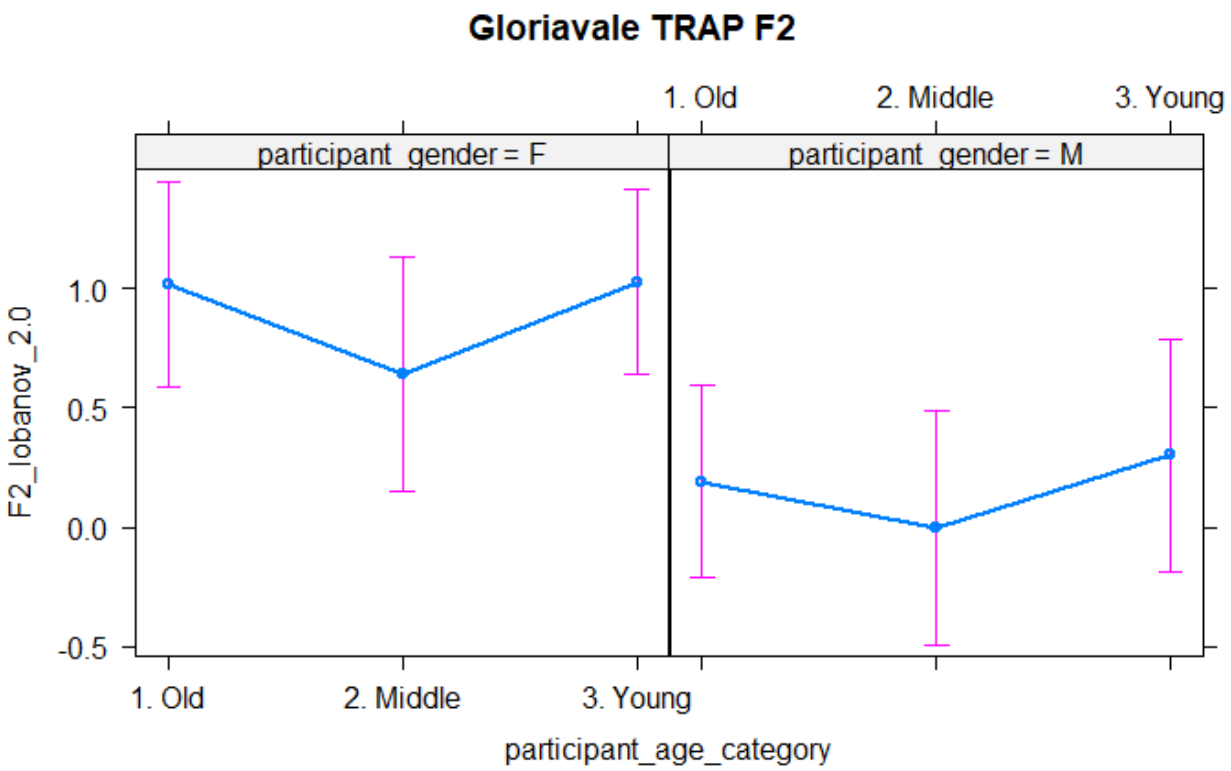

Gloriavale DRESS F2
F2_lobanov_2.0
1.2
1.1
1.0
0.9
0.8
0.7
F
M
participant_gender


Gloriavale FLEECE F1
1. Old
2. Middle
3. Young
participant_gender = F
participant_gender = M
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
F1_lobanov_2.0
1. Old
2. Middle
3. Young
participant_age_category


Gloriavale GOOSE F2
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
F1_lobanov_2.0
F
M
participant_gender


Gloriavale NURSE F2
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
F1_lobanov_2.0
1. Old
2. Middle
3. Young
participant_age_category


Gloriavale TRAP F1
0.6
0.4
0.2
0.0
-0.2
F1_lobanov_2.0
F
M
participant_gender


Gloriavale TRAP F2
1. Old
2. Middle
3. Young
participant_gender = F
participant_gender = M
F2_lobanov_2.0
1.0
0.5
0.0
-0.5
1. Old
2. Middle
3. Young
participant_age_category